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THE PHENOMENA OF INFECTION *

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Doerr[1] of Vienna closes an excellent review of recent work on so-called anaphylaxis or protein sensitization with the following paragraph:

> While it must be admitted that the action of those infective bacteria which are not known to produce specific toxins remains without explanation, and while the theories which have been developed by von Pirquet, Friedberger, Vaughan, Schittenhelm, Weichardt and others have opened up a new way to the understanding of incubation, fever and crises, still it must be borne in mind that the premises of these theories do not possess the force of demonstrated facts. It has not been positively shown that the symptoms of anaphylaxis are due to the parenteral cleavage of proteins, that the true anaphylactic poison is identical with that produced *in vitro* and that both come from the antigen. Even if we agree with Dold, Sachs and Ritz that so far as the rôle of anaphylaxis in the infectious diseases is concerned, it is irrelevant from what matrix and by what processes the hypothetic anaphylactic poison is produced, even then not all the difficulties are removed. Numerous infecting agents are not anaphylactogens; they do not differ in their effects on sensitized and non-sensitized animals, and even when there are differences they are slight compared with those seen when the protein antigens derived from the higher plants and animals are employed. The relatively simple structure of the bacterial proteins is the cause of this. Therefore it is questionable whether one has the right to explain the phenomena of the infectious diseases with serum sensitization as a starting-point. Moreover, the infections are not so monomorphic as some suppose from a superficial consideration. Measles and scarlet fever seem much alike; still, during an attack of the former the body cannot be sensitized to tuberculin or vaccine, while the latter does not induce this condition.

This statement, following as it does a fair but critical review of the new theories referred to and the work on which they rest, is certainly just. The purpose of this paper is to state the sensitization or parenteral digestion theory as I understand it and weigh the evidence for and against it. It should be plainly understood that in doing this I am speaking my own views, and it is probable that no one of the investigators with whom Doerr has done me the honor of grouping me would agree with me in all details, nor I with them.

It may be well to meet at the outset the chief objection which Doerr makes, in the foregoing quotation, to the sensitization theories. He states that the bacterial proteins have a relatively simple molecular structure. This is an assumption without a fact to support it. Because bacterial cells are relatively simple morphologically, it has been inferred that they are simple in the chemical structure of their protein constituents. This certainly is not true. My students and I have shown that the bacterial proteins are quite as complex as those of the cells of our own bodies. They contain at least two carbohydrate groups, one of which has been quite positively located in the nucleic acid fraction, while the seat of the other has not been determined. They furnish nuclein basis, thus showing the presence of one or more nucleic acids, which has been inferred from their behavior toward the basic strains. They yield diamino- and mono-amino-acids in like abundance and variety as these are found in the proteins of the higher plants and animals. In short, bacteria consist largely of glyconucleoproteins. Recent papers from Kossel's laboratory[2] confirm my assertion that the chemical structure of the bacterial proteins is not simple.

Doerr's statement that numerous infective agents are not anaphylactogens is one which I can neither confirm nor deny. It seems to me, however, to be an assertion which needs qualification. There are many kinds and degrees of sensitization depending on the sensitizer and the cell acted on. In some instances the sensitized state continues for many years; in others it lasts for only a few weeks or months, while in still others it is even more ephemeral.

SENSITIZATION OR PARENTERAL DIGESTION THEORY

In order to save space and time I will formulate my views concerning the phenomena of infection as follows:

All infecting agents are living proteins capable of growth and multiplication. They may contain carbohydrates, fats and waxes, possibly other and simpler chemical bodies, but their essential and characteristic constituents are proteins. This is true not only of all infecting agents but also of all life units. The infecting agents which we know are bacteria, protozoa, molds and yeasts. These possess physical characters which enable us to individualize them, but theoretically there is no reason why a living thing, and consequently a virus, may not be a liquid. Each and every living thing must feed, assimilate and excrete. Its molecules must be in a labile state, taking in and casting out atomic groups simultaneously. The bacterium can feed only on the pabulum within its reach, and of this it can utilize only that which it can fit into its molecular structure. Only this is pabulum to the cell. Organisms which cannot utilize the proteins of the animal's body cannot be pathogenic to that animal. All living things feed through the activity of their ferments. These are of two kinds, analytic and synthetic. The former split up the pabu-

* A lecture given before the Harvey Society of New York, Jan. 17, 1914.

1. Doerr: Handbuch der pathologischen Mikroorganismen, Ed. 2.

2. Tamura: Ztschr. f. physiol. Chem., 1913, lxxxix, 85.

lum into proper building-stones, while the latter places these stones in proper position in the cell molecule. Usually we say that cell ferments are extracellular and intracellular. The former diffuse more or less into the medium and exert a cleavage action; the latter remain in the cell and do a constructive work. That these ferments are in reality different bodies is indicated not only by the parts they play in the life of the cell, but also by the fact that they are differently affected by heat and chemical agents. Ferments are specific in two senses: first, each kind of cell elaborates its own ferment, and secondly, the ferment is able to split up only certain proteins. Besides, for each ferment there is an optimum temperature at which its action is greatest. There are many bacteria which cannot grow at body temperature. These organisms cannot be pathogenic. This is true of most saprophytic bacteria found in water. Then, there is the relation between ferment and substrate which requires a nicety of adjustment which is not thoroughly understood. Finally, in a general way an accumulation of fermentative products retards the action of the ferment.

It must be remembered that the body-cells, like the bacterial cells, digest proteins. They also elaborate analytic and synthetic or extracellular and intracellular ferments. These ferments have been especially studied in the leukocyte. The extracellular ferments elaborated in leukocytes are germicidal because they digest bacterial proteins, and they are destroyed by a temperature of 56 C. (132.8 F.). The intracellular ferment of the leukocyte is also bactericidal and for a like reason, but it bears a much higher temperature. Every living cell in the animal body, like every bacterial cell, elaborates its specific ferments. This has been demonstrated positively by Abderhalden[3] and his students.

It must be evident from what has been said that the pathogenicity of a given virus is determined by its ability or inability to grow in the animal body. Its inability to do this may be due to the fact that it cannot digest and therefore cannot feed on the proteins of the body, or it may result from the fact that the ferments of the body-cell digest and destroy the bacterial proteins. Herein lies the explanation of all forms of bacterial immunity, either natural or acquired. Toxin immunity is quite a different thing and will not be treated in this paper.

In case of exposure, the chance of infection depends on several variables, such as the number and viability of the organisms introduced and the state of health or capability of resistance on the part of the animal. In man the effectiveness of the defensive ferments is influenced by heredity, age, food and possibly other conditions. The great fatality of measles and tuberculosis among those peoples who have inherited no resistance to these diseases is well known. That infants and adults are physiologically protected to a marked degree against diphtheria, while children are largely without protection, has been demonstrated by Shick[4] and others. We have long known that typhus, plague, beriberi, scurvy and pellagra are most in evidence when abundance and variety in food are lacking, and the work of Osborne and Mendel,[5] McCollum and Davis,[6] Wellman and Bass,[7] Funk[8] and others on the vitamins promises much.

3. Abderhalden: Z'schr. f. physiol. Chem., 1913, lxxxvii., 220, 231.
4. Shick: München. med. Wchnschr., 1913, p. 2608.
5. Osborne and Mendel: Jour. Biol. Chem., 1913, xv, 311.
6. McCollum and Davis: Jour. Biol. Chem., 1913, xiv, 40.
7. Wellman and Bass: Jour. Trop. Med., 1913.
8. Funk: München. med. Wchnschr., 1913, p. 2614.

When the infecting organism multiplies rapidly and soon leads to general sensitization of the body-cells, the disease developed is acute. On the other hand, when the invading organism finds the conditions for its growth less favorable, multiplies slowly, and only imperfectly and locally sensitizes the body-cells, the disease is chronic. When the virus is widely distributed throughout the body and sensitization is general, the disease is systemic. On the other hand, when the virus and sensitization are restricted, the disease is local. In cattle and sheep the anthrax bacillus grows rapidly, becomes abundant in the blood, sensitizes generally, and consequently develops an acute systemic disease. On the other hand, in the hog the growth of the anthrax bacillus is restricted to the lymphatic glands, sensitization is equally local, and the disease is both local and chronic.

That a given pathogenic bacterium may grow in one animal and not in a closely related species is illustrated by the susceptibility of the ordinary sheep and the immunity of the Algerian variety to anthrax. Koch found that the bacilli of mouse septicemia and the cocci that induce necrosis multiply simultaneously in the white mouse, but when field-mice are inoculated with mixed cultures the latter infects while the former fails to develop. Even natural immunity is only relative and may be overcome (1) by massive doses of the virus, which was demonstrated by Chaveau for Algerian sheep; (2) by lowering the temperature, as shown by Pasteur for chickens, and (3) by starvation, as exemplified by Canalis and Morpurgo for pigeons; all with anthrax.

One very important thing that we have learned in recent years is that the ferments produced by the body-cells may be and are modified under certain conditions. The cell may form a wholly new ferment or one whose activity is so modified that it may be so regarded. It is either a new ferment or the old one greatly modified and intensified in its action. We have utilized this function of the body-cells for more than a hundred years in vaccination against small-pox, but this use has been wholly empiric until recently, when it was scientifically explained by the researches of von Pirquet. Small-pox virus is pathogenic to the man who has not suffered an attack of the disease or has not been vaccinated, while to the man who has recovered from the disease and to the one who has been properly vaccinated it is not pathogenic. By the introduction of the vaccine organism, which is a non-virulent form of the virus, the body-cells are trained, as it were, to digest and destroy its proteins, and this leads to the immediate destruction of the virus on subsequent exposure to the disease. The same principle holds in typhoid vaccination with the dead bacillus, now so widely and successfully practiced.

My students and I have convinced ourselves, at least, of the following:

1. The infective bacteria, taking the colon, typhoid, tubercle and the pneumococcus as types, contain an intracellular poison.

2. This is not a toxin because it is not destroyed by heat; it is not specific; it produces no antibody when injected into animals in increasing non-fatal doses.

3. These bacteria elaborate no soluble toxin or poison. In old cultures there may be a trace of poison, but this results from the autolysis of the cells and is not a cellular secretion.

4. This poison can be obtained in soluble form only after cleavage of the cellular proteins, which may be accomplished by superheated steam, dilute acids or alkalies.

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5. This poison is a group in the protein molecule.

6. It exists in all true proteins, in pathogenic and non-pathogenic bacteria and in vegetable and animal proteins.

7. It is a split product of the protein molecule.

8. It may result from the cleavage action of proteolytic ferments.

9. In most vegetable and animal proteins the poisonous group is neutralized by combination with non-poisonous groups; consequently such proteins have no poisonous action until they undergo molecular disruption.

10. The poisonous group is common to all proteins; it is probably not chemically identical in different proteins, but is so nearly so that its gross toxicologic action is the same. We designate it as the central or primary group in the protein molecule.

11. This primary group is poisonous because of the avidity with which it combines with secondary groups in the proteins of the animal body.

12. The specificity of proteins lies in their secondary, non-poisonous groups. It is in these that one protein chemically and biologically differs from another.

13. Biologic relationship among proteins is determined by the chemical structure of their molecules. There are as many kinds of proteins as there are kinds of cells.

14. The specificity of the infective bacteria does not lie in the poisonous group of their proteins, for this has the same action in all, but in the non-poisonous groups.

15. The poison that kills in all the infectious diseases is the same.

16. The symptoms of the infections differ on account of the organ or tissue in which the virus accumulates and where it is split up and its poison liberated.

17. The ferment which causes the cleavage of the bacterial proteins in the different infectious diseases is specific. How strictly this is true can be determined only by more exhaustive and exact study.

When a fatal dose of a living virulent culture of the colon bacillus is injected into the peritoneal cavity of a guinea-pig the following effects result: For a period of time which usually varies from eight to twelve hours the animal remains apparently normal. Its temperature may fluctuate slightly but not beyond the normal limits. The coat is not roughened and the position and behavior of the animal in no way distinguish it from its untreated fellows. This is the period of incubation, and varies within certain time limits; but within these it is fairly constant. During this time the bacilli are multiplying enormously in the animal body. They are converting animal proteins into bacterial proteins. This is largely a synthetic or constructive process. The relatively simple, soluble proteins of the animal's body with but little change are woven into the more complex structure of the bacterial proteins. The soluble proteins of blood and lymph are built into the cellular proteins of the bacteria. There is no liberation of the protein poison and consequently no disturbance in the well-being of the host. It seems plain from this that the multiplication of bacteria in the animal body is not the direct and immediate cause of the symptoms of disease. When multiplication is most rapid and unobstructed there are no symptoms, and, in fact, disease is not in evidence. During the period of incubation of an infectious disease the invading organism supplies the ferment, the soluble proteins of the animal body constitute the substrate, the process is constructive, simple proteins are built into more complex ones, no protein poison is liberated and no recognizable symptoms mark the progress of the infection. Still, in the development of the phenomena of infection the period of incubation is critical, and the rate at which the infecting virus multiplies during this time is an important factor in determining the final outcome. The more virulent the virus, the more rapidly does it multiply, and this means a larger amount of animal protein converted into bacterial protein. Rosenthal[9] has shown by means of his bacteriometer that the more virulent a bacterium the more rapidly does it multiply.

Somewhat abruptly there is a change in the behavior of our inoculated guinea-pig. The hairs behind the ears begin to stand out and soon the entire coat becomes rough. It no longer eats, but retires to one corner of the cage and seems to be in distress. Slight pressure over the abdomen elicits evidence of pain, and the temperature begins to fall and continues to do so until death. In case of recovery a rise in temperature is the first evidence of improvement. The characteristic lesion is a marked hemorrhagic peritonitis.

This somewhat abrupt change in the condition of the animal marks the end of the period of incubation and the beginning of the active disease. The animal cells have become sensitized and are now pouring out a specific ferment which digests the bacterial proteins. In the active stage of the disease, the animal cells supply the ferment, the bacterial proteins constitute the substrate, complex cellular proteins are split into simpler bodies, the process is analytic and destructive, the protein poison is liberated, the symptoms of disease develop and life is placed in jeopardy.

It must not be understood that the processes that characterize the period of incubation and those that develop the active stage of the disease are separated by a well-marked time line and that the former wholly cease before the latter begin. This is not my understanding at all. Growth may be extending in one part of an organ, such as the lungs in pneumonia, while the destructive process predominates in another part. Only those cells with which the bacterial protein comes in contact are sensitized, and sensitization may be quite localized.

We take a second guinea-pig and inject into its peritoneal cavity a fatal quantity of the dead cellular substance of the colon bacillus. In this experiment we cut out one of the factors in the development of an infection, the growth of the bacillus in the animal body. This has been done *in vitro* and we inject into the peritoneal cavity enough of the cellular poison to kill. When this is done the animal remains quite well for about four hours, after which it shows symptoms identical with those manifested by its fellow which had been inoculated with the living culture. The lesions induced in both animals are the same. We conclude from this experiment that a period of about four hours is required to sensitize the cells of the guinea-pig sufficiently to enable them to begin the cleavage of the bacterial protein and carry this process to the production of enough poison to so disturb the health of the animal that the effects come within the range of clinical observation. There are involved in the process of the incubation of an infectious disease two important functions: One is the growth of the invading organism and the other is

9. Rosenthal: Arch. f. Hyg., 1913 lxxxi, 81.

the sensitization of the body-cells. The more rapid the growth of the virus and the greater the amount of foreign protein accumulated at the time when sensitization becomes effective, the more disastrous are the results. Fortunately, particulate proteins, like bacteria and protozoa, are not so effective in the production of sensitization as are the simple, soluble proteins, such as those of blood-serum. Cell penetration is probably essential to the most perfect sensitization. Equally fortunate is it that the living cellular proteins are not so suddenly disrupted by the ferments produced by the body-cells as are the simple, soluble proteins.

To a third guinea-pig we administer a fatal dose of the free protein poison split off from some protein molecule either by chemical agents or by a ferment acting *in vitro*. In this instance we cut out the whole period of incubation, and the animal dies as quickly as it would from a dose of hydrocyanic acid. The infective agent has been grown artificially, the cleavage has been effected *in vitro* and the ready-formed poison acts with the promptness that characterizes the action of other deadly chemical poisons. These experiments have been repeated in my laboratory many times with varied proteins, living and dead, particulate and in solution, of bacterial, vegetable and animal origin, and with their split products. If I have correctly interpreted them, they throw much light on the phenomena of infection; but before we question the correctness of the interpretation we must proceed with our experimentation.

The older literature shows that a few observers have long known that the parenteral introduction of diverse proteins is followed by the development of fever. There is an article by Gamaléia,[10] written twenty-five years ago, to which I wish to call attention. The title of the article is interesting, "The Destruction of Microbes in the Febrile Organism." Gamaléia showed that fever followed the parenteral introduction of dead as well as living bacteria, either pathogenic or non-pathogenic. He concluded from these experiments that fever is not a phenomenon of bacterial growth in the body. He found that the less virulent the infecting organism the higher and the more persistent is the fever. A rabbit inoculated with the anthrax bacillus has a fever for only a few hours, when the temperature falls and death results, while one inoculated with the second vaccine has a fever of three days. When a rabbit is inoculated with a highly virulent anthrax bacillus, it may show little or no elevation of temperature, and dies within from five to seven hours. Gamaléia made similar experimental observations on other diseases and came to the following conclusion: The febrile process is not a result of the action of the bacteria, but, on the contrary, is due to a reaction of the organism against their presence and results in their destruction. I feel that I am fully justified in offering these experiments, made a quarter of a century ago, as supporting my theory or explanation of the phenomena of infection.

In 1909 it was shown by work in my laboratory[11] that fever could be induced experimentally in animals by the parenteral administration of proteins of diverse origin and structure, and that by modifying the size and frequency of the dose the type of the fever could be determined at will. We produced an acute fever, the temperature rising to 107 and terminating fatally in a few hours, remittent and intermittent and continued fevers. The last-mentioned furnished charts in no way distinguishable from those of typhoid fever. Not only can fever be induced, but its accompaniments also. In continued fever, thus produced, there is increased nitrogen elimination, emaciation, loss of appetite and lassitude and decreased urinary secretion. These experiments were amplified[12] and have been confirmed by Friedberger and others. Protein fever, which includes practically all clinical fevers, is a result of parenteral protein digestion. In this process the animal cells supply the ferment and the foreign protein serves as substrate. The foreign protein may be living or dead, formed or without form. It may be detached or dead tissue from the animal's own body, as after burns. It may be absorbed from some mucous surface, as in hay-fever. It may be introduced artificially, as in serum disease. It is usually a living protein, as in the infectious diseases.

There are two kinds of parenteral proteolytic ferments, non-specific and specific. The former are normally present in the blood and tissues, especially in the first. They differ in kind in different species and in amount and efficiency in different individuals. Their function is to digest and dispose of foreign proteins that find their way into the blood and tissues. Within limits they are general proteolytic ferments, as are those of the alimentary canal; but the variety of proteins on which they act is more limited. They constitute the most important factor in racial and individual immunity. We are immune to most bacteria and protozoa, not because they do not elaborate poisons, for every protein molecule contains its poisonous group, but because they are destroyed by the general proteolytic enzymes as soon as they enter the body and are not allowed to multiply. These non-specific parenteral ferments are probably secretions of certain specialized cells, as the leukocytes. Under normal conditions these enzymes are capable of digesting those proteins on which they act only in small amounts; but the cells which elaborate them may be stimulated in their activity. Whether or not these enzymes become specific when brought into contact with certain proteins has not been determined. The immunity secured by these enzymes is limited in extent and transitory in duration.

The specific, parenteral proteolytic enzymes are not normal products of the body-cells, but are brought into existence under the stimulation of those proteins, introduced into the blood and tissues, which on account of their nature or amount, escape the action of the non-specific ferments. A protein introduced into the blood and not promptly and fully digested by the non-specific enzymes is discharged from the blood-current and deposited in some tissue, the cells of which after a time develop a specific ferment which splits up this protein while it is not capable of digesting any other. For certain proteins there are certain predilection organs and tissues in which they are stored, either exclusively or most abundantly: the pneumococcus in the lungs, the typhoid bacillus in the spleen, mesenteric and other glands, the viruses of the exanthematous diseases in the skin, etc.

For the development of the specific proteolytic ferments time is required, and this varies with the sensitizing protein and probably with the tissue in which it is deposited. The development of these ferments necessitates changes in the chemical constitution of the pro-

10. Gamaléia: Ann. de l'Inst. Pasteur, 1888, ii, 229.
11. Vaughan, Victor C.; Wheeler, Sybil May, and Gidley, William F.: Protein Fever; the Production of a Continued Fever by Repeated Injections of Protein, THE JOURNAL A. M. A., Aug. 21, 1909, p. 629.
12. Vaughan, Cumming and Wright: Ztschr. f. Immunitätsforsch., 1911, ix, 458.

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tein molecules of the body-cells, and in this way the body-cells acquire a new function, which subsequently is brought into operation only by that protein to which its existence is due. As a result of this rearrangement in molecular structure the cell stores up a specific zymogen which is activated by contact with its specific protein.

Whether or not the products of digestion with the non-specific ferments and those elaborated by the specific enzymes are identical remains to be ascertained. The presence of a poisonous group in the protein molecules is disclosed in both enteral and parenteral digestion as well as by cleavage with chemical agents or enzymes *in vitro*. In enteral digestion the poison is most apparent in the peptone molecule, which is large, complex and non-diffusible. Further action of the alimentary enzymes splits the peptone into harmless amino-acids. The cleavage of proteins by chemical agents is a crude process in which much of the poison is destroyed. When the poison is formed in the alimentary canal the animal is protected from its injurious effects by the walls and by its ultimate destruction. When the poison is liberated parenterally there are no protecting walls.

There are certainly other causes of fever, but the fever of the infectious diseases results from the parenteral digestion of the infecting agent by specific secretions elaborated by the body-cells; it is a phenomenon of the disposal of foreign and harmful material and it must be regarded as beneficent. There is a point, however, above which it becomes a danger *per se*. In parenteral digestion the following sources of heat production must be evident: 1. unaccustomed stimulation and consequent increased activity of the cells which supply the enzyme must be the source of no inconsiderable increase in heat production. 2. The cleavage of the foreign protein increases the liberation of heat. 3. The reaction between the product of the digestion and the tissues must lead to increased heat production. I regard the first and last of these as the more important sources of the overproduction of heat in the infectious disease. When the poison is liberated rapidly and abundantly the temperature falls and death is imminent.

There are many conditions which affect the course of a fever, and some of these may be mentioned. Some viruses sensitize more quickly and thoroughly than others. It is probable that the living cells, so long as they are living, do not sensitize. Some of the virus protein must go into solution before cell penetration, which seems essential to thorough sensitization, can occur. A living colon bacillus of not more than twenty-four hours' growth, when injected intraperitoneally into a guinea-pig, requires about ten hours to sensitize. With the dead bacillus the time is reduced to half, while with old autolyzed cultures in which the sensitizing group is already in solution the time is still further shortened. Some pathogenic organisms, like the tubercle bacillus, have been so long parasitic that they have learned to protect themselves by deposits of fats and waxes. In this way they are probably protected to some extent against the destructive ferments elaborated by the body-cells. In all acute infections the destruction of the invading organism is modified and delayed by the altered relation between substrate and ferment and the accumulation of fermentative products. All these questions are but little understood and their solution must await further research.

I have given the new theory of the phenomena of infection as I understand it. The attack on these problems has only commenced and I do not hold that my opinions possess in every particular the force of demonstrated facts. If they prove to be provocative of further and more exact research I shall feel that they have been justified.

EVIDENCE FOR AND AGAINST THE THEORY

I shall now take up some of the facts for and against this theory and try to make impartial statements concerning them. In the first place it is true, as Doerr states, that it has not been conclusively demonstrated that the poison formed *in vitro* is identical with that elaborated *in vivo*. In fact, we do not know the exact nature of the poison produced by the disruption of the protein molecule by chemical agents. I hold that this poison is a group in the protein molecule. Others question this and hold to the endotoxin theory as first elaborated by R. Pfeiffer. So long as the poison was obtained only from complex proteins such as bacterial cellular substances, the mixed proteins of blood-serum and egg-white, which is known to be a protein mixture, my opponents had an argument which I could not meet, but some proteins, such as edestin, are believed by all students of protein chemistry to be chemical units, just as much so as crystallized bodies. We take edestin and split it into poisonous and non-poisonous portions. We inject the former into a fresh guinea-pig and it kills the animal promptly after the development of certain definite and well-marked symptoms. We take another fresh guinea-pig and sensitize it to edestin and after a proper interval we give the same animal a second injection of edestin. This animal develops the same symptoms in the same time and in the same sequence as the other, and the post-mortem findings in the two are identical. We know that the edestin injected into the animal contains the protein poison which we may liberate *in vitro*. It seems that the only conclusion justifiable from these facts is that in both instances the animal dies from the same poison and that by the process of sensitization the capability of splitting up the edestin molecules has been developed. Besides, the blood-serum of an animal sensitized to egg-white will, when incubated with egg-white in proper proportion *in vitro*, produce a poison which kills a fresh animal with the same symptoms and with the same post-mortem condition as are developed on reinjection into a sensitized animal, while the blood of a fresh animal has no such action on egg-white *in vitro*. From these facts I draw the following conclusions: 1. The protein poison is a group in the protein molecule. 2. In a sensitized animal's blood-serum there is some agent capable of splitting up a protein and thus liberating a poison, and that something does not exist in the blood-serum of the unsensitized animal. If there be a fallacy in this reasoning I cannot see it. If it should be found that edestin and other proteins, believed to be chemical units, are not such, then my first conclusion is not wholly justified.

I do not assert that the protein poison formed *in vitro* by the chemical disruption of the protein molecule is identical with that elaborated *in vivo* by specific ferments, but that they are closely related chemically is inferred from their physiologic action. As I have stated, we do not know the chemical structure of the protein poison. We are certain that it is not an amino-acid, although it may be closely related to one of these. In its action the protein poison seems quite similar if not identical with the histamin of Barger and Dale. It will probably be found that the protein molecule con-

tains a whole spectrum of poisons, one differing from another in some slight alteration in structure.

Years ago R. Pfeiffer demonstrated that cholera, typhoid, colon, and many other bacilli secrete no toxin, but that the cellular proteins of these organisms are poisonous. In the abdominal cavities of animals previously treated with these bacteria, when new injections are made, the bacterial cells dissolve like sugar or salt in water, but notwithstanding this destruction of the bacteria the animal dies. Indeed, death is due to the destruction of the bacterial cells and the consequent liberation of the protein poison. When the amount of cellular substance is insufficient to furnish a fatal dose of the poison, the animal survives and escapes infection. I regard Pfeiffer's phenomenon as the basis of lytic immunity, and it must be evident that this form of immunity is not in any way comparable to that induced by toxins. Pfeiffer was certainly wrong in explaining this phenomenon on the supposition that the bacterial cell contains an endotoxin. The harmful content of the cellular substance is not a toxin in the sense that this term is now used, but a poison.

The next important work done along this line was that of Weichardt, who found that the blood-serum of rabbits previously treated repeatedly with placental proteins dissolves the same both *in vitro* and *in vivo* with the liberation of a poison. This experiment was a forerunner of Abderhalden's test for pregnancy.

Schlecht[13] found that on reinjection of a sensitized animal the esosinophils are increased, and Chancellor[14] finds that there is also an increase in the same corpuscles on the injection of the protein poison. So far as it goes, this indicates that the poison liberated in anaphylactic shock and that formed from proteins by my method are similar in their effects.

The blood of an animal killed by anaphylactic shock coagulates slowly, while that of animals killed with the protein poison prepared by chemical agents coagulates in the usual time. This might be regarded as evidence that the poison formed *in vivo* and that prepared *in vitro* are not identical; but the agent which leads to retardation of coagulation may be one of the non-poisonous groups liberated on the cleavage of the protein molecules in the body. The protein poison obtained by chemical means from certain proteins, such as the tubercle bacillus, however, does prevent the coagulation of the blood. This is the first evidence that I have found of any dissimilarity in the action of the protein poison as obtained from different proteins. It has been shown by Loewitt[15] and Waele[16] that a non-coagulable blood is not always in evidence in anaphylactic shock.

The fundamental fact in the work recently done by Abderhalden, the full import of which we cannot yet determine, rests on the development of ferments as a result of the parenteral introduction of foreign proteins. How strictly specific these ferments are is a matter which must be measured by larger experience.

Weinland first showed that invertase is developed in dogs by the parenteral introduction of cane-sugar, and this work has been amplified by Abderhalden, Heilner and others, until it has been demonstrated that the cells of the animal body can be trained to elaborate specific proteolytic, amylolytic and lipolytic ferments. The presence of specific ferments in the blood-serum is now being used in the diagnosis of pregnancy, cancer and dementia praecox.

If I correctly interpret the recently reported experiments of Thiele and Embleton,[17] they furnish strong evidence in favor of the theory which I have formulated. These investigators have developed the following points:

1. When the normal protective ferments of the animal body are inhibited in their activity, bacteria, which, under normal conditions are non-pathogenic, become pathogenic. It is well known that ferment activity may be retarded by hypertonic saline solutions. When such non-pathogenic micro-organisms as *Sarcina lutea* and *Bacillus prodigiosus* and others are suspended in from 2 to 5 per cent. salt solution and injected into the abdominal cavity of the guinea-pig, the normal lytic ferment of the animal is inhibited; the micro-organism multiplies and kills. In other words, a harmless bacterium is converted into a fatal one by holding in abeyance the normal protective function of the body. Years ago Buchner demonstrated that the alexin of blood-serum is highly sensitive to salt content and by variations in this the activity of the ferment may be hastened, lowered or wholly arrested. In this connection it may be interesting to record the fact that some physicians believe that a heavily salted diet predisposes to pneumonia.

2. The blood and exudates of animals dying of infectious diseases are shown by the application of the ninhydrin and biuret tests to their diffusates to contain protein-cleavage bodies which are not present under normal conditions. These proteoclastic bodies could hardly have their origin elsewhere than in the cleavage of the bacterial proteins.

3. These cleavage bodies found in the blood of animals dying of the infectious diseases develop typical anaphylactic shock in fresh animals when injected intravenously.

Edmunds[18] has shown that the physiologic action of my protein poison in dogs and cats is essentially the same as that manifested in sensitized animals on reinjection, and the same has been shown by several observers to be true in guinea-pigs. While identity in physiologic action does not establish chemical identity, it certainly suggests similarity in chemical structure.

Acute anaphylactic shock is so striking in its manifestations that it has delayed studies of chronic protein intoxications, in which, I doubt not, there lies a rich and profitable field of research. Every foreign protein finding its way into the blood and tissues is more or less injurious to the body-cells. It may be directly harmful or it may act through its split products. When it is repeatedly introduced, the body-cells become sensitized and split it up. When the intervals between the introductions are short there can be nothing like anaphylactic shock, but parenteral digestion has been established and the protein poison is liberated, possibly not in quantity sufficient to develop recognizable symptoms, but there results a chronic poisoning. If the theory which I have developed be true, the lesions of the infectious diseases are, in part at least, due to protein poisoning. Moreover, the disease needs not be an infectious one in order to lead to either acute or chronic protein poisoning. The absorption of undigested, or partially digested proteins from the alimentary canal may be quite as harm-

13. Schlecht: Arch. f. exper. Path. u. Pharmakol., 1912, lxvii, 137.
14. Chancellor: Ztschr. f. d. ges. exper. Med., 1913, ii, 29.
15. Loewitt: Arch. f. exper. Path. u. Pharmakol., 1912, lxviii, 85.
16. Waele: Ztschr. f. Immunitätsforsch., 1913, xvii, 314.
17. Thiele and Embleton: Ztschr. f. Immunitätsforsch., 1913, xix, 643, 666.
18. Edmunds: Ztschr. f. Immunitätsforsch., 1913, xvii, 105; also unpublished research.

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ful as inoculation with a living virus. It seems to me that we are now quite justified in speaking of the "albuminal diseases," including under this title all health disturbances due to the parenteral introduction of foreign proteins, be they living or dead, organized or unorganized. The description given by Richet of his experiments on anaphylaxis in dogs suggests strikingly cholera nostras in man. Schittenhelm and Weichardt induced an "enteritis anaphylactica"; in like manner, Friedberger[19] developed pneumonia in sensitized guinea-pigs by spraying horse-serum into the trachea. This has been confirmed by Ishioka,[20] and a careful histologic study of the lungs in this condition has been made by Schlecht and Schwenker.[21] It seems highly probable that we have been wrong in believing that all disease conditions are due to infections, many of which are secondary. In this connection I wish to call attention to the valuable research reported by Longcope,[22] who has induced nephritis in rabbits and dogs by repeated injections of horse-serum and egg-white. When we consider the care with which nature protects the body-cells from foreign proteins by the radical changes wrought in their structure by alimentary digestion, and since we know that every unbroken protein contains a highly poisonous group, we should proceed cautiously in the employment of serum and vaccine therapy. The value of diphtheria and some other antitoxins has been demonstrated, and the good accomplished with these agents constitutes one of the great triumphs of modern medicine; but much of the protein therapy now so largely employed is without scientific justification. I have tried earnestly to so disrupt the protein molecules of certain pathogenic bacteria as to obtain a non-poisonous, sensitizing group which might be of value in either prophylactic or curative treatment, but without practical success. I have obtained from the cellular substances of the colon, typhoid and tubercle bacilli non-poisonous sensitizing proteins. Those from the colon and typhoid give some degree of immunity to subsequent inoculation with respective living cultures, but the protection thus secured is low in degree and ephemeral, while that from the tubercle bacillus fails to protect experimental animals. I must therefore report failure with glimpses of that will-o'-the-wisp which haunts the laboratory of every investigator. In view of the great number of cleavage lines that run through the large protein molecule, it is not surprising that the gem with perfect facets, which one seeks, is not revealed at the first stroke of the hammer.

The studies of Pick and Obermeyer[23] confirmed and amplified by Landsteiner and Prasek,[24] render it highly probable that the specificity of the protein molecule is closely connected with its aromatic group. Furthermore, it is worthy of note that gelatin, in which the aromatic group is wanting, is not a sensitizer. The above-mentioned investigators have shown that when certain substitutions are made in the aromatic group of a protein it loses its specificity. It is also noteworthy that gelatin does not yield the protein poison when disrupted by our chemical method. It seems, therefore, that gelatin contains neither the sensitizing nor the poisonous group.

19. Friedberger: Deutsch. med. Wchnschr., 1911, xxxvii, 481.
20. Ishioka: Deutsch. Arch. f. klin. Med., 1912, cvii, 500.
21. Schlecht and Schwenker: Deutsch. Arch. f. klin. Med., 1913, cviii, 405.
22. Longcope: Jour. Exper. Med., 1913, xviii, 678.
23. Pick and Obermeyer: Wien. klin. Wchnschr., 1912, 1904 and 1906.
24. Landsteiner and Prasek: Ztschr. f. Immunitätsforsch., 1913, xx, 271

I must protest against classifying the toxins and anaphylactogens together under the name of "antigen." This term should be reserved for the former. The anaphylactogens produce no antibody. Pick[25] very properly states that diphtheria toxin does not elaborate a precipitin, agglutinin or hemolysin, and that it is not an anaphylactogen. He proposes that the toxins be designated as monovalent antigens in contradistinction to the polyvalent antigens, which elaborate numerous immune bodies. I can see no reason for calling the anaphylactogens antigens. The anaphylactogens are colloids of highly complex molecular structure, while the latest research points to the non-protein character of the toxin. As Pick states: Faust finds the active principle of cobra and crotalus venom to be a nitrogen-free sapotoxin; Abel and Ford report that the hemotoxin of *Amanita phalloides* is a glucosid containing nitrogen and sulphur; Bang and Forssmann state that the hemolytic component of the red corpuscle is a lipoid; Jacoby states that he has obtained a nitrogen-free ricin, and according to Burckhardt the hemolysin of *Bacterium putidum* is non-protein. Likewise, tuberculin is an anaphylactogen, or not according to the preparation. When free from other constituents of tuberculoprotein it is neither anaphylactogen nor toxin, but a poison. Tuberculoprotein contains an anaphylactogen group, but this does not constitute the active principle of tuberculin, which is of relatively simple structure.

Many investigators have failed to sensitize animals with tuberculin, while most have succeeded with dead bacilli and with aqueous extracts. This is not surprising; indeed, it is what should have been expected. Tuberculin consists of digested, denatured proteins of relatively simple composition. It is well known that peptones and polypeptids do not sensitize. The protein poison, when detached from other groups in the protein molecule, sensitizes neither to itself nor to the unbroken protein. The fact that tuberculin does not sensitize, or does so imperfectly, raises a serious question as to its employment as a therapeutic agent. It is undoubtedly an excellent diagnostic agent because its relatively simple structure favors its prompt cleavage when injected into an animal already sensitized by the disease. But if it is not a sensitizer its therapeutic good effect, if it has any such effect, must be confined to the possible establishment of a tolerance to the tuberculopoison. Sensitization to tuberculoprotein can be induced by bacillary emulsions, with watery extracts, and with the non-poisonous residue. If the sensitization secured by the last-mentioned agents is as good as that produced by the others, it has the advantage of not containing any poison. On the other hand, if the therapeutic effect desired consists in the development of a tolerance to the poison, tuberculin must be preferred unless we should use the more completely isolated poison.

25. Pick: Kolle and Wassermann Handbuch, Ed. 2, 1, 698.

Reducing Weight.—The famous George Cheyne, who was a man of enormous bulk, reduced himself by dieting from 32 stones (448 pounds) to proper dimensions. One of his aphorisms says: "Every wise man after Fifty ought to begin and lessen at least the quantity of his Ailment, and if he would continue free from great and dangerous Distempers and preserve his Senses and Faculties clear to the last, he ought every seven years to go on abating gradually and sensibly, and at last descend out of life as he ascended into it, even into a child's Diet." Put in other words, it reads—We eat too much after 40 years of age.—Sir William Osler.

GASTRIC TETANY

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I wish to make record of what to me was a very interesting case, and the only one of gastric tetany encountered in my practice. Notwithstanding the fact that Kussmaul called attention to gastric tetany in 1869, comparatively little advance was made in its treatment until a surgeon, Mayo Robson, took up its consideration in 1898. Various theories were given as to its causation. First, Kussmaul, who described the disease originally, declared it to be due to a desiccation of the tissues, very much as is seen in cholera or cholera morbus, from non-absorption of fluids. Then again, it was thought by Albu to be due to auto-intoxication following dilatation of the stomach, with or without pyloric stenosis. Germain Sée and others believed it to be due to reflex irritation or irritability of the nerves of the stomach, and, lastly, it was thought that the presence of foreign bodies in the stomach might initiate gastric tetany.

The case I wish to report was that of a young man, aged 31, a chemist in the Dupont Powder Works at Woodbury, N. J., sent to me by his physician, Dr. J. M. Marcy of Merchantville, N. J. He came to me in July, 1912, with as typical a history of duodenal ulcer as I have ever encountered. He, like nearly all such patients, habitually went with sodium bicarbonate in his pocket, of which he partook freely and frequently in order to obtain relief. Like many others he had become accustomed to washing out his stomach from time to time, especially at night, when gaseous distention, eructations and spasms of the stomach were usually more distressing than during the day. He had never vomited, however.

The diagnosis of a duodenal ulcer having been made by both his physician and myself, he was sent to the hospital and prepared for operation. The stomach was found to be markedly dilated, I should say almost twice the usual size, and a large ulcer was found, more than an inch in diameter, on the distal side of the pyloric vein. In addition to this large ulcer there were numerous rather fine adhesions to the gall-bladder and transverse colon. I mention this because it may be that they had some influence (I question it, however,) in increasing the obstruction at the pylorus and producing a consecutive dilatation of the stomach. A no-loop posterior gastrojejunostomy was done, and for ten days his convalescence was absolutely uneventful.

I never saw a patient do better in my life. So well was he on the tenth day that I told him he could leave his bed and soon thereafter go home. After being up all day walking about the hospital and feeling very well, he had a restless night and suffered a recurrence of the spasms of the stomach, of which he had complained before the operation, and which, he said, had frequently awakened him during the night. On the eleventh day following the operation, in the morning, about 9:30, he had a convulsion, which began in the fingers, soon extended to the forearms and also to the feet and legs; but there was no involvement of the arms, the thighs, or the muscles of the body, so the nurse who was present testifies. The resident physician saw him just as he was coming out of the convulsion. Both he and the nurse said that the patient's mind was absolutely clear throughout the attack, but he complained of "terrible weakness," and there was a marked acceleration of the heart-action with embarrassment of respiration.

The following day about the same time he had a very severe convulsion, which the house-surgeon fortunately witnessed from the beginning. The fingers were flexed at the metacarpophalangeal joints and extended at the tips, with the thumbs adducted, making a typical accoucheur's hand. The tonic spasms of the forearms soon extended to the arms and those of the legs to the thighs. The muscles of the abdomen also became involved, and the resident said that wherever he touched the man the muscles seemed to become as hard as steel. The mind was clear throughout the attack, but the patient complained greatly of weakness afterward. The pulse was 130; respiration was greatly embarrassed, although he was not cyanotic. A characteristic feature of this convulsion, and a subsequent one which I happened to witness, was that the face was drawn to the left side, the eyebrow was elevated, and the eyeball rolled up under the lid, so that only the conjunctiva could be seen. He had five convulsions in four days; then they ceased. I think their disappearance was largely due to the frequent and copious lavage of the stomach.

The interesting point in connection with this case is that the gastric tetany came on eleven days after a successful drainage operation, and so far as I know, it is the only one on record. Nearly all of the cases reported as having received surgical treatment were relieved promptly by a drainage operation, either a gastro-enterostomy, a pyloroplasty or a pylorectomy. Only a few have been treated by the latter method.

My patient made a satisfactory recovery, leaving the hospital in thirty-one days after the operation, or twenty days after the convulsions began, and is perfectly well to-day.

It is interesting to note that in practically every one of these cases that has been closely observed, either at operation or at necropsy, there has been a dilatation of the stomach, and this has been consecutive either to a benign or a malignant obstruction at the pylorus. In the vast majority of instances the obstruction has been benign, either a fresh ulcer or a cicatrix on the base of an old ulcer, but always there has been marked dilatation of the stomach. In a few instances pressure on the pylorus, the duodenum or both, seems to have been caused by a distended gall-bladder, by a large gall-stone, pancreatic cyst, or by some tumor making pressure in the vicinity of the pylorus and causing a consecutive dilatation of the stomach.

As marked evidence of this I will cite the report of a necropsy which was taken from a case-report in the *Proceedings* of the Pathological Society of New York.

"The patient, aged 44, was taken ill two days before his death. While occupied in a stable he was taken with a sharp pain in the abdomen, and when help arrived he was stretched on the floor, rigid. His head could be moved, but not his legs. He was said to be semiconscious. After three-quarters of an hour the stiffness of the legs and arms disappeared. The patient refused to be taken to a hospital, and remained in the stable until 4 or 5 o'clock in the afternoon, when he was taken with another sharp pain in the stomach, and passed into a condition of general rigidity, the arms drawn up over his head, and the legs spastic. About 8 o'clock in the evening he was taken with a similar seizure. He was then removed to St. Vincent's Hospital. Dr. Stumer made a diagnosis of gastric tetany. The patient was pulseless; respiration was slow, with respiratory oppression. After entering the hospital there appeared a general spasticity of the abdomen and extremities, at times accompanied by severe pain. After four hours the spasm relaxed, and during this time the pulse became almost normal. The temperature was subnormal. The abdominal distress persisted during the relaxation. He became able to speak, but not intelligently, nor enough to give an absolutely correct statement of his trouble and the previous status of his illness. After six hours he was again seized with an attack, accompanied by great respiratory oppression.

"After one and a quarter hours he died, apparently from asphyxia, with no relaxation of the muscles. An autopsy was performed. The stomach contained 4.5 liters of fluid. The musculature of the stomach was very much thickened, especially along the anterior border. There was no evidence

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of any change in the mucous membrane. The thickening appeared to be due not entirely to an edema, but rather to a muscular hypertrophy, and an increase in connective tissue, particularly in the submucosa. At the pyloric end of the stomach was an old ulcer which had led to marked constriction of the pyloric opening. The esophagus was longer than normal. The position of the stomach in the body was not normal. There were adhesions to the transverse colon, a long band extending from the omentum to the tip of the bladder, pulling the stomach over from its normal position." The parathyroid glands were not examined, according to the statement of the pathologist.

None of the theories as to the etiology of this disease are entirely satisfactory, but Mayo Robson, that very astute clinical observer, believes that gastric tetany is due to an absorption of the stagnant contents of a dilated stomach which poisons the nerve centers and thereby increases reflex irritation.

The only case on record of marked gastric tetany due to a foreign body is reported by Warbasse. It occurred in a human ostrich, a man who swallowed knives, screws, pins, tacks, nails, watch-chains, anything he could lay his hands on. The weight of the metallic substances pulled the stomach down, so as to cause a kinking at the pylorus, resulting in obstruction. This patient was operated on successfully by Warbasse, and it seems that the obstruction was the cause of the tetany, and that it, in turn, was produced by the sagging of the stomach, due to the heavy substances which the patient had swallowed.

The one point I wish to make is that the medical treatment of such cases is practically a failure. Nearly all of the patients die, at least 88 per cent., according to Brown and Engelbach,[1] who have most exhaustively investigated the subject and given the latest and most complete statistics. Furthermore, surgical treatment is usually successful. This treatment consists of a drainage operation to relieve the overdistended and irritable stomach. It should be accomplished by a gastro-enterostomy, pyloroplasty or pylorectomy, according to the nature of the lesion causing obstruction. In simple, cicatricial stenosis of the pylorus, gastro-enterostomy satisfactorily meets the indications, whereas in fresh ulceration or malignant disease causing obstruction, pylorectomy should be preferred. When due to foreign bodies, gastrotomy and their removal of course, should be practiced.

Frequent and thorough lavage of the stomach does a great deal of good in lessening the number and severity of the gastric spasms and general convulsions, but evidently does not prevent them, as my case conclusively shows. The patient was accustomed to washing out his stomach before operation, and it was thoroughly practiced twenty-nine times after the convulsions began and before the patient left the hospital. It was amazing how much his stomach would contain when lavage was practiced; always pints and occasionally quarts of a thin, greenish sour and acid secretion would usually be removed before each washing, which was always kept up until the returning fluid was absolutely clear. It has been said, and I believe rightly, that incomplete lavage does more harm than good, really increasing, as it does, the irritation.

How a stomach with two openings, the patent pylorus and a working gastro-enterostomy more than 2½ inches in width, for I always make a large opening, and at the most dependent part of the stomach, could become so distended with fluid is more than I can comprehend. Naturally, I first thought of obstruction due to a kink in the jejunum, but this was quickly eliminated for two reasons: The bowels acted daily, and when purgatives were administered visible evidence of them was had in the stools very quickly. Moreover, the gastric contents, expelled voluntarily and withdrawn by the tube, showed, at no time, the slightest trace whatsoever of feces, but little bile, and consisted almost wholly of altered gastric secretion. It was highly acid, thin, and as green as grass. Gallons of sterile water were used at each lavage before the fluid returned perfectly clear.

I made no attempt to bring on convulsions by practicing Trousseau's, Erb's and Chvostek's methods of doing so. The diagnosis was plain enough, and the spasms when they came of themselves were too painful to reproduce unnecessarily. I was too glad to see them disappear even to consider doing anything which either intensified or made them more frequent.

While, as already indicated, it is my belief that every case of gastric tetany demands immediate surgical treatment, as in this way only can the dilatation, which is consecutive to pyloric stenosis, be effectually overcome, I am also of opinion that too optimistic statements have been made concerning both the immediate and remote effects of surgical intervention, as the most severe cases may be fatal in spite of it. In those denominated as of the third degree by Trousseau, in which the muscles of the pharynx, larynx and tongue, in addition to the musculature of trunk and limbs are involved, it seems reasonable that nothing can be depended on to give relief. My case plainly indicates that tetany may supervene eleven days after a perfectly satisfactory drainage operation has been done, and that it may yield to thorough and repeated gastric lavage with rather full doses of antispasmodics. In conjunction with the above treatment the withdrawal of all starchy, saccharin or other food likely to cause fermentation, should be rigorously insisted on. In the mildest cases of the first degree, in which the spasms are limited to the muscles of the fingers, hands and forearms, and there are no decided toxic manifestations, careful feeding, purgation and gastric lavage may suffice; but, with greater evidences of toxemia and an extension of the tetanic spasms to all of the limbs, trunk and head, a further postponement of surgery seems unwise and will, perhaps, lead to a fatal result. Buttermilk was the ideal nourishment in the case here reported. Everything else apparently caused fermentation, soon followed by nausea, eructations and vomiting, conjoined with depression and evidences of general toxemia.

I would refer those especially interested in the literature of this subject to the able and exhaustive articles by Warbasse,[2] Cunningham,[3] and John Young Brown.

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1. Brown and Engelbach: Am. Jour. Obst., 1908.

2. Annals of Surgery, 1904.
3. Annals of Surgery, 1904.

Beginnings of Surgery.—The commencement of surgery dates from the moment when instruments of daily use, the weapons of civilization, were used as means of healing. Such were, in earliest times, flints, thorns, splinters of wood, shells, fish-bones, pointed bones, teeth, horns, etc. With such means foreign bodies could be extracted, abscesses opened, scarification and blood-letting performed. To the instruments of daily life were added its manipulations as assistance to the art of healing; for instance, the means of mending broken weapons served as a pattern for primitive treatment of fractures.—Neuburger, History of Medicine.

THE EFFECT OF TARTRATES ON THE HUMAN KIDNEY *

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In 1912 Underhill[1] published his discovery of a severe form of renal degeneration or "nephritis" in rabbits and dogs produced by the subcutaneous administration of sodium tartrate. This publication was followed by three papers regarding experimental tartrate nephritis by F. P. Underhill, H. Gideon Wells and Samuel Goldschmidt.[2] Their observations are to the following effect:

1. Nephritis with impairment of renal secretory activity and extremely severe degeneration or necrosis of the convoluted tubules may be caused by the subcutaneous administration of less than 0.5 gm. of sodium tartrate to phloridzinized fasting rabbits weighing from 2,000 to 2,500 gm. The lesions seem to involve only the tubular epithelium, the glomerules being practically unaffected.

2. In similar manner nephritis may be caused by tartrate in somewhat larger doses when administered to fasting animals without phloridzin.

3. Rochelle salt administered by mouth to fasting animals causes nephritis: 8 gm. given to a 1,660-gm. rabbit caused fatal result; 5 gm. given to a 1,480-gm. rabbit caused no apparent ill effects; but histologic examination of the kidneys showed granular degeneration of the epithelium of the tubules.

4. When tartrates are given by mouth to well-fed rabbits, the salt is not so toxic as when similarly administered to fasting animals. In fact, after the administration of 1 gm. of Rochelle salt to a well-fed rabbit weighing 2,000 gm. the urine increased from 54 c.c. to 150 c.c. in twenty-four hours.

5. Sodium carbonate, sodium acetate and sodium citrate in quantities sufficient to maintain alkalinity of the urine in a fasting rabbit (2 gm. per day) cause no renal changes.

6. When the subcutaneous administration of tartrate in small doses (0.5 gm. tartaric acid per kilogram) is accompanied by the administration by mouth of sodium carbonate or sodium citrate, the renal changes are not so pronounced as without the alkalinizing salts. When large doses of the tartrate are given the alkali proved beneficial, as shown in the nitrogen elimination and in the histopathology of the renal tissues.

Shortly after these papers were published there also appeared a paper by Pearce and Ringer,[3] which corroborated the results described above, and called particular attention to the fact that in dogs the renal injury may be reduced by the production of a diarrhea by the tartrates, which prevents their absorption.

As expressed by the first-named authors, particular interest in the investigation of the influence of tartrates on kidney structure and kidney function is due to the wide-spread employment of tartrates in articles of diet, and the general employment of Rochelle salt as a purgative. The question was suggested by Dr. Wells: Are there injurious effects produced in the human subject, especially in nephritis, by the use of tartrates? The question is made more pointed by the suggestions of Fischer[4] in his works on edema and nephritis, that tartrates reduce edema, and may relieve nephritis.

Observations were accordingly made on several patients in the service of Dr. Frank Billings and occupying the Sprague Institute beds in the Presbyterian Hospital. Potassium and sodium tartrate was given by mouth to ordinarily well-fed adults. The dose was from 1 to 6 drams, the average dose authorized by the U. S. Pharmacopeia being 2 drams. Each voiding of urine was put into separate clean sterile bottles and placed at once in an ice-box. The test for albumin was by the use of acetic acid and potassium ferrocyanid. The hydrogen ion concentration was determined, in some of the cases, by means of indicators. The results of a few of the observations are summarized in the following protocols:

CASE 1.—C. S., man, aged 57. Moderately advanced arteriosclerosis. Urine examinations:

December 31, 1912, noon: No albumin.
4 p. m.: Sp. gr. 1.011; *faint trace nucleo-albumin;* occasional hyaline and hyalogranular cast, occasional leukocyte. Reaction neutral to paranitrophenol.
Jan. 1, 1913, 2:40 a. m.: Sp. gr. 1.009; *faint trace serum albumin;* sediment same. Reaction neutral to methyl red.
6 a. m.: *Rochelle salt,* 2 drams given.
10:30 a. m.: Sp. gr. 1.013. *No albumin.* Few casts. Reaction neutral to rosolic acid.
2 p. m.: Sp. gr. 1.015. *No albumin.* Sediment same. Neutral to rosolic acid.
6:30 p. m.: Sp. gr. 1.015. No albumin. Sediment same. Neutral to rosolic acid.
January 2, 3 a. m.: Sp. gr. 1.015. *Faint trace nucleo-albumin.* Sediment same plus numerous spermatozoa; reaction same.
7 a. m.: Sp. gr. 1.015 *Faint trace nucleo-albumin;* occasional hyaline cast; neutral to rosolic acid.
12:15 p. m.: Sp. gr. 1.007; *distinct trace serum albumin;* occasional hyaline cast; neutral to rosolic acid.
4:50 p. m.: Sp. gr. 1.007; *faint trace nucleo-albumin;* occasional hyaline cast; neutral to rosolic acid.
January 3: Seven specimens; two showed faint trace nucleo-albumin, others no albumin. All neutral to rosolic acid; sediments same as above.
January 4, 5 a. m.: Sp. gr. 1.010. No albumin; sediment same; neutral to methyl red.
6 a. m.: Rochelle salt. Three drams given; four specimens urine voided during day; none showed albumin; sediment same; all neutral to rosolic acid.
January 5 and 6: No albumin in any specimen.
January 9, 3 a. m.: Faint trace nucleo-albumin; other specimens during day showed no albumin.
January 10, 2 a. m.: Sp. gr. 1.004; no albumin.
6 a. m.: *Rochelle salt,* 6 drams.
6:30 a. m.: Sp. gr. 1.002. *Distinct trace nucleo-albumin;* other specimens during day showed no albumin; sediment remained about same.

CASE 2.—G. K., man, aged 37. Acute bronchitis.

Nov. 12, 1912, 3:30 p. m.: Sp. gr. 1.021; faint trace nucleo-albumin. Sediment; urates ++, occasional cylindroid.
November 13, 11:35 a. m.: Sp. gr. 1.018; faint trace nucleo-albumin; numerous cylindroids.
4 p. m.: No albumin.
November 16, 6 a. m.: *Rochelle salt,* 2 drams.
1:50 p. m.: Sp. gr. 1.015. No albumin. Sediment, numerous cylindroids.

CASE 3.—Mrs. E. P. Hysteric hemiplegia, right-sided pyelitis (interval).

Nov. 22, 1912, 8:50 p. m.: Sp. gr. 1.008; faint trace nucleo-albumin sediment; moderate number of leukocytes; bacilli, neutral to rosolic acid.

* From the Otho S. A. Sprague Memorial Institute Laboratory of Clinical Research, Rush Medical College.

1. Underhill, F. P.: Jour. Biol. Chem., 1912, xii, 115.
2. Jour. Exper. Med., 1913, xviii, 417, 322 and 347.
3. Pearce, R. M., and Ringer, A. I.: Jour. Med. Research, 1913, xxix, 57.
4. Fischer, Martin H.: Oedema, New York, John Wiley and Sons, 1910, p. 116, etc; Nephritis, New York, John Wiley and Sons, 1912, p. 435.

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November 23, 5:50 a. m.: Sp. gr. 1.004; faint trace nucleo-albumin; sediment same; neutral to paranitrophenol.
6 a. m.: Rochelle salt, 2 drams.
9:25 a. m.: Sp. gr. 1.005; faint trace nucleo-albumin; sediment same; neutral to rosolic acid.
2 p. m.: Sp. gr. 1.012; tests same as at 9:25 a. m.

CASE 4.—G. A., man, aged 29. Acute bronchitis.

Dec. 1, 1912, 6:15 and 8:15 a. m.: No albumin; few mucus threads; occasional leukocyte.
December 2, 4 and 6 a. m.: No albumin; sediment same as above.
6 a. m.: *Rochelle salt*, 2 drams.
10 a. m.: Faint trace albumin; numerous cylindroids; no casts.
1 p. m.: No albumin.
December 5, 6 a. m.: *Rochelle salt*, 3 drams.
7 a. m.: No albumin; sediment same as above.
2 p. m.: No albumin; sediment same.

CASE 5.—H. K., man, aged 19. Lumbago; tonsillectomy.

Dec. 12, 1912, 2 a. m.: Acid to litmus; distinct trace albumin; few hyalogranular casts.
6 a. m.: Acid to litmus; no albumin; hyaline threads; occasional cast.
6 a. m.: *Rochelle salt*, 3 drams.
10:45 a. m.: Neutral to rosolic acid; distinct trace albumin; rather numerous leukocytes; occasional cast.
5:30 p. m.: Neutral to rosolic acid; very faint trace albumin; occasional cast.
7:40 p. m.: Neutral to rosolic acid; no albumin; sediment same.
December 13, 3:20 a. m.: Neutral to methyl red; faint trace nucleo-albumin.

CASE 6.—T. R., man, aged 19. Acute tonsillitis.

Dec. 26, 1913, 6 a. m.: Sp. gr. 1.022; neutral to paranitrophenol; faint trace albumin; urates and calcium oxalate crystals.
11:30 a. m.: Practically same findings except no crystals.
8:30 p. m.: Sp. gr. 1.020; other findings same.
December 27, 6:30 a. m.: Sp. gr. 1.030; faint trace albumin; urates +.
6:30 a. m.: *Rochelle salt*, 3 drams.
1:50 a. m.: Sp. gr. 1.022; neutral to paranitrophenol; faint trace albumin; urates +.
3:55 p. m.: Sp. gr. 1.028; neutral to rosolic acid; no albumin; occasional cylindroid and hyalogranular cast.
December 28, 6:30 a. m.: Sp. gr. 1.003; neutral to methyl red; faint trace nucleo-albumin and serum albumin.
10:20 a. m.: Sp. gr. 1.018; neutral to paranitrophenol; no albumin.

CASE 7.—J. F., man, aged 32. Osteo-arthritis. Was in hospital Dec. 8, 1912, to Nov. 19, 1913. In March, 1913, urinalysis showed no albumin or casts. In May, 1913, he had a rather prolonged attack of diarrhea with severe abdominal cramps and from three to six stools per day. June 3, 1913, the legs and scrotum were markedly edematous and there was free fluid in the abdomen and fluid in the right chest. Urinalysis showed a large amount of albumin and many hyaline and granular and epithelial casts. From August 11 to August 18 Rochelle salt, 2 drams, was given every morning, and from Sept. 3 to Nov. 11, 1913, the same dose was given every morning and sometimes another similar dose given in the evening. Although the case had seemed almost hopeless, the patient left the hospital much improved, with no fluid in chest or abdomen and very little swelling of the feet. The urine still contained a large amount of albumin and few casts. While one cannot say how much, if any, of his improvement was due to the Rochelle salt, yet he improved more after it was given than before. It certainly seemed not to harm him, although given over a long period.

Two patients with nephritis of pregnancy seen at St. Luke's Hospital with Dr. C. E. Paddock were given cream of tartar or Rochelle salt regularly. One case entirely cleared up before termination of pregnancy and the other showed marked improvement, and these results were very satisfactory from the clinical point of view. These are cited, not to describe the plan of treatment in nephritis or even to give evidence of any benefit of tartrates, but to show that the administration of tartrates, even in nephritis, is not inconsistent with good clinical results.

These illustrations are typical of conditions and results which were obtained in other instances. 1. They give no evidence indicating that potassium and sodium tartrate in ordinary doses given by mouth in the human subject will cause albuminuria or cylindruria. 2. There is no evidence to show that tartrates aggravate an existing nephritis. 3. The acidity of the urine, indicated by the hydrogen ion concentration, was as a rule less after the administration of tartrates.

These findings are entirely consistent with the results of Underhill, Wells and Goldschmidt, for the smallest toxic dose administered by mouth to the well-fed rabbit (2,800 gm.) was 10 gm. Rochelle salt. This would be equivalent to 6.7 ounces in a man weighing 150 pounds. Large doses of Rochelle salt would, of course, have an important element of safety in their cathartic action, which would prevent absorption, as Pearce and Ringer observed in dogs. Administered subcutaneously, the smallest toxic dose was 0.5 gm. per kilogram, or about 1 ounce in a man of 150 pounds. In the first place, it is hardly conceivable that 6.7 ounces of Rochelle salt would be administered by mouth to a patient; and in the second place, it should impress on us the increased toxicity of medication administered subcutaneously or intravenously. When tartrates are given in a certain sublethal dosage, Underhill, Wells and Goldschmidt further noted that the urine of animals becomes pale, alkaline, and larger in quantity, which conforms in the first two respects to our own observations in man.

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CHRONIC ARTHRITIS

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Few diseases are the subject of greater confusion than those of the joints. Cases of chronic arthritis are so common, so distressing to the patient and so rebellious to treatment, that their study is one of the greatest interest and importance. Yet we find that in any work dealing with arthritis, the subject is most conflicting and uncertain. A whole series of diseases seem inextricably mixed up under the same name, or a variety of designations are applied to the same disease. Such names as "arthritis deformans," "rheumatoid arthritis," "chronic arthritis," "chronic rheumatism," "osteo-arthritis," "rheumatic gout," "infective and toxic arthritis," etc., are all indiscriminately applied to numerous affections of the joints, and to different stages of the same disease.

This confusion, as well as the number of theories which are prevalent in most works on this subject, indicate a very imperfect knowledge of this group of diseases, a condition which is almost natural considering the great technical difficulty attending the study of their pathology.

It is difficult to find any satisfactory terminology which will include all the various types of arthritis. "Arthritis deformans," for instance, is a common term applied to this group of diseases, yet if deformity be

waited for before diagnosing the disease, the patient may become a hopeless cripple in whose case treatment may be of little avail. Similarly, the term rheumatoid arthritis" has become so entrenched in literature that it has come to represent a more or less definite clinical picture; yet as a precursor of chronic arthritis of any type, acute articular rheumatism is neither invariable nor even common.

To make any clinical or pathologic classification of arthritis is most unsatisfactory, as gradations occur between all types, and almost any variety may have a number of possible etiologic factors.

An etiologic classification is equally confusing as each causative agent may be associated with a great variety of pathologic types. Also the etiology of the many forms of arthritis has long been a subject of inconclusive discussion, and even at present the most speculative and unsubstantiated views are entertained. It is essential therefore before there can be any satisfactory classification or treatment of arthritis, that its etiology and pathology must be thoroughly understood.

At the outset of the study of chronic arthritis one must first be certain of the diagnosis of the disease. It is by no means uncommon to see cases considered and treated as arthritis which are not related to this condition at all. Cases of injury of the joints are frequently confused with arthritis, and in these cases, as in all studies of arthritis, roentgenoscopy is of the greatest diagnostic value. Not uncommonly the pains over the shoulder in various gallbladder, liver and diaphragmatic conditions simulate arthritis; so also the pains in the hips in prostatic and pelvic diseases, and in sciatica. Again, gout may cause great swelling of the joints, and its recognition and appropriate treatment is necessary before it can in any way be improved. Similarly, it is by no means uncommon to see cases treated as some other disease, such as tuberculosis of the joints, which are in reality the much less serious condition of what is generally known as rheumatoid arthritis.

In the investigation of the etiology of chronic arthritis one is faced with the great multiplicity of types which this disease may assume. In some cases there may simply be a chronic synovitis with or without effusion into the joints. In others the opposing bones become united by fibrous or bony ankylosis, while in other cases all kinds and grades of deformity may be produced. Are all these types related to different etiologic factors, or may any one infective process in different degrees of virulence and duration be responsible for the production of a variety of types of arthritis?

The most simple type of chronic joint-disease is that which is observed in old age. Here the joints simply become stiff, and often somewhat painful on movement. Often there is a moderate degree of musculature contracture which may limit still more the movements of the joints. These contractures are largely due to muscular wasting and occur particularly if the subject has been bedridden for a considerable time. They may, however, further the impression that there is an advanced chronic arthritis. In young, very emaciated subjects dying from some wasting disease such as phthisis, this stiffness of the joints and contractures resemble the condition seen in extreme old age, and may be very misleading.

DEGENERATIVE ARTHROPATHY

In a series of two hundred necropsies in elderly persons I found that in practically every case, when old age sets in, the cartilage of the joints participates in the general atrophy of the tissues. These changes occur independently of arteriosclerosis, or are associated with it only so far as arteriosclerosis assists in producing the general body atrophy. Degenerative changes in the joints are found with equal frequency in aged subjects, whether arteriosclerosis is marked or not. These atrophic changes in the joint-cartilage are found as commonly in women as in men. Indeed, the joints show degenerative changes in women at an earlier age than in men, as the atrophy of the internal organs is more marked and occurs earlier in women. Even though a man has hands gnarled by hard work the atrophic changes in his joint-cartilage may not be worse than are found in many women who have never seemed to have any joint-trouble. In the joints of all senile subjects there occurs a simple atrophy of the cartilage, chiefly in the situations normally most exposed to friction, and possibly also where nutrition is poorest. In the lower end of the femur there commonly is found a patch of cartilage degeneration on the anterior surface between the condyles and also in the center of the under surface of both condyles. In older subjects, however, the entire surface of the cartilage may become villous. These appearances are due to an atrophy of the cartilage. This process commences on the surface. The cartilage shrinks and tends to become fibrillated. In parts the surface of the joint may come to appear as if the underlying bone were covered only by a thin layer of fibrous tissue. This atrophic process generally takes place very irregularly, beginning at the surface and extending vertically along the lines of the cartilage cells. This irregular process accounts for the villous appearance of the cartilage so commonly observed. In the later stages, when the general atrophy of the body and the atrophy of the joint-cartilages are very marked, the cartilage may in parts completely disappear, uncovering the underlying bony structures. When the bone becomes exposed to the friction of the opposing joint-surface it tends to become thickened and eburnated. In these cases there is apt to be considerable pain on movement of the affected joint.

In the upper end of the tibia similar changes are apt to occur, although not so marked as in the lower end of the femur. The joint-surface often is observed villous in appearance, and in parts the underlying bone may have become extremely fibrillated and frayed out at their inner margins. In extremely old atrophied subjects the semilunar cartilages may become so fibrillated and atrophic that they can hardly be recognized. The articular surface of the patella is particularly subject to degenerative changes, and its entire surface may come to have a villous appearance, while the rest of the cartilages in the knee-joint are but slightly involved. The elbow-joints also usually show well-marked changes in old age. Patches of degeneration are common in the middle of the convexity of the lower end of the humerus, and the cartilage may be seen to be receding from the periphery of the articular surface. This recession is particularly evident on the head of the radius, where commonly only the center of the articulating cup may be covered by cartilage. The concavity of the olecranon in its middle part always shows a marked atrophy, and appears as if a band of fibrous tissue of varying width separated the articular surface into two equal parts. Fissures where the cartilage is atrophied in other situations in this joint-surface are also frequently observed, although the atrophy in the center of the concavity is always very marked before these become evident. In these atrophying conditions the cartilage becomes fibrillated and finally disappears. It may, however, become calcified or replaced by bony

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tissue. In all the joints somewhat similar changes occur. In the acetabulum, for example, the cartilage in the center of the concavity atrophies from the attachment of the ligamentum teres outward, till in many cases as much as one inch in diameter is covered by fibrous tissue only.

In these cases of senile atrophy there are no inflammatory changes associated with the process, as no evidences of inflammation in the synovial membrane or the marrow-spaces under the cartilage can be found. The condition follows on similar processes which cause general tissue atrophy in old age, possibly on defective nutrition. It is, therefore, not a real arthritis, but is perhaps better styled a degenerative arthropathy.

Similar changes are found in the joints of subjects who have died from chronic diseases associated with marked wasting, and consist essentially of an atrophy of the cartilage associated with no inflammatory changes. Such patients often complain of pains and stiffness in the joints, and a mistaken diagnosis of arthritis is not uncommonly made.

ETIOLOGY OF ARTHRITIS

True arthritis is essentially an inflammatory process, and its effects depend on the quality of the damaging agent, its duration and its method of extension to the joint. The same cause may thus give rise to vastly different forms of arthritis, and the mistake must not be made of necessarily classifying similar types in the same etiologic group.

Arthritis occurs in the course of numerous general infections, many of which seem to have a special selection for the joints. In typical acute rheumatism there is a rapid, although shifting and comparatively transient involvement of the joints. Infections with a great variety of organisms, such as gonococci, many strains of streptococci, staphylococci, occasionally pneumococci, typhoid bacilli, *Bacillus coli*, and others may present arthritis as their most prominent clinical feature. In many acute diseases such as diphtheria and the exanthems, arthritis may occur, yet, as also found in endocarditis occurring in these cases, some intercurrent infection, in many cases streptococcal, may be responsible for the associated joint changes.

It is also asserted that various defects of metabolism are associated with the dissemination of toxic substances which are capable of exciting inflammatory changes in the joints. This, however, is really only suggestive and has by no means been proved, as these toxins have not been determined. It is also more probable that the digestive disturbances which so frequently go along with arthritic cases are due to the same general infection which has damaged the joints, or that the abnormal intestinal condition admits of the dissemination of bacteria into the circulation, and in this way infects the joints. In this connection it is not uncommon to find that in many cases of dilatation of the colon there is an associated bacteriemia, particularly of the *Bacillus coli* and streptococci, these organisms being often also readily isolated from the urine. In the history of a case of chronic arthritis it is suprisingly frequent, almost universal, to find such conditions as chronic pharyngitis, tonsillitis, pyorrhea alveolaris, endometritis, nasal sinus infection, mastoiditis, chronic gonorrhea, chronic phthisis, or some other existing septic focus which may have important relationship to the etiology. Certain of these infective agents may act in some form of irritative toxins in the same manner as gout, in which uratic crystals are deposited in the cartilage, and may sometimes excite secondary inflammatory reactive changes in the synovial membrane and marrow-spaces subjacent to the joint cartilage, and so produce a true arthritis. In the bulk of cases, however, the inflammatory changes, which can invariably be observed, are due to a lodgment of bacteria in the joint structures. As a further clinical proof of the infective nature of arthritis deformans, it is by no means uncommon to find some swelling of the lymph-nodes and enlargement of the spleen. These are particularly evident in those cases of chronic arthritis affecting children, generally known as Still's disease.

Arteriosclerosis has been held by many to be a direct cause of arthritis, yet numerous cases are observed without any marked arteriosclerosis. The latter condition undoubtedly may be produced by the same factors which are also causing arthritis, but it has no direct bearing, as some assert, on the production of joint inflammation. Microscopic sections of joints in arthritis deformans cases do not, as a rule, show arteriosclerosis, and the condition does not seem to depend on any decreased blood-supply from the larger arteries of the bone-marrow.

Similarly, without any conclusive proofs either therapeutic or pathologic, it has been stated that arthritis deformans cases depend on a deprivation from the system of lime-salts.

PATHOLOGY

The milder grades of joint-infection, such as occur in rheumatic fever, cause an inflammation in the synovial membrane, and generally some effusion of serum into the joint and periarticular tissues. There is usually seen some slight congestion of the vessels in the marrow-spaces just underlying the joint-cartilage, giving to the joint-surface a somewhat pinkish color; but only rarely is the cartilage damaged in any way. As a rule, one might say invariably, in acute rheumatic fever due to the specific organism of that disease, this resolves completely, and chronic synovitis and persistent effusion do not result as in the more severe forms of arthritis. In other infections—*Streptococcus pyogenes*, gonococcus, etc. — the same course may be taken and result in complete recovery. Even purulent effusion may occur, and yet the joint may suffer no permanent damage.

In animals (I have used for this purpose rabbits and dogs), the joints may be injected with organisms of low-grade virulence, *B. coli* after prolonged cultivation, for instance, and slight or marked effusion may be produced. The synovial membrane is inflamed and the effusion from this is apt to be serous and soon disappears. In other cases, when organisms of greater virulence are used, the effusion may be purulent. Extensive purulent effusion may distend a joint for a considerable time, and yet the joint cartilage may remain undamaged.

When the infective agent is still more virulent, marked changes in addition are found in the cartilage. The vascular structures underlying the cartilage become engorged, giving a reddened appearance to the cartilage, and serum may be exuded from them through the cartilage toward the joint. The cartilage-cells along the lines of the exudation of the serum from the subjacent vessels become swollen and disintegrated, and their capsules distended. In other degenerated areas produced in this way leukocytes and granulation-tissue rapidly extend toward the surface of the cartilage, and should the irritant continue in unabated virulence, the cartilage at these points soon becomes destroyed and replaced by

granulation-tissue. In the severer types of infection the entire joint-surface may be involved. In the milder varieties, however, the process tends to be more localized. A common appearance is to find after ten days or so that the fluid in the joint, previously purulent, is clear and the synovial membrane is congested and villous in appearance. This may be the only change. In other cases, however, the cartilage in several spots is apt to be pitted, where granulation tissue has extended upward from the subcartilaginous vascular structures.

Certain observers of arthritis in human cases have considered that simultaneously with these subcartilaginous changes destroying the cartilage, there occurred an extension of granulation-tissue from the inflamed synovial membrane at the periphery of the articular surface, and this pannus, spreading over the cartilage, destroyed it as it advanced. This, however, so far as I have observed, is in relatively small amount in experimental infections of joints in animals, and with no degree of certainty can be noticed in human cases.

In human cases of arthritis I have observed much the same pathologic changes to occur as can be produced experimentally in animals, the intensity and duration of the damaging agent being responsible for the many types which are encountered clinically.[1] Acute infections may, therefore, be found resulting in a synovitis with slight or large effusions into the joint cavity. This fluid may be serous, yet in other types of infection may be purulent. This may completely resolve and leave a normal joint, sometimes even if there has been extensive purulent effusion. In other cases chronic synovitis results, the joint synovium becoming thickened and villous with the frequent outpouring of fluid into the joint or a permanent effusion. Some of these hyperplastic villi may eventually become cartilaginous and some may break loose into the joint and form the loose bodies so commonly found in these cases. With even marked chronic synovial inflammatory changes the cartilage may still remain undamaged. In the more severe infections the cartilage may be, in whole or in part, destroyed, depending on the intensity and duration of the infection and the amount of inflammatory changes induced in the subcartilaginous marrow-spaces. The cartilage is destroyed in front of the inflammatory proliferation extending from a comparatively narrow layer of inflamed marrow-spaces immediately subjacent to the cartilage. The cartilage thus, in part or altogether, may become replaced by fibrous tissue, which also may unite with similar productions of fibrous tissue on the articular surface of the opposing bone and so produce adhesions, particularly if no excessive fluid separates the joint-surfaces, and movement be limited. It is in this way that the adhesive types of chronic arthritis are produced. These adhesions may naturally be localized to a few spots, or may be distributed uniformly over the entire articular surface. Secondary changes in this new tissue are also possible, although generally the process remains stationary at the fibrous adhesive stage. Bone and even cartilage formation may, however, occur, and eventually the joint may be obliterated by complete osseous union between the opposing bones.

The earlier stages of the less acute, progressive forms of arthritis often appear as small depressions on the surface of the cartilage. These degenerated areas are generally associated with an inflammatory focus in the subjacent marrow-spaces. The primary agent causing this may originally have settled in this position in the epiphysis, or have extended through from the joint. These subcartilaginous inflammations are, however, commonly found some little distance away from the cartilage, which suggests that the primary involvement of the joint is, in many cases, from the direction of the epiphysis. The degeneration of the cartilage over these areas is probably due to some local interference with nutrition, but it may be produced in the same way, as can be observed to take place in acute arthritis, by the extension upward of exudates which destroy the cartilage.

The endosteal cells lining the marrow-spaces included in this inflammatory process tend to produce metaplastic changes. Cartilage formation is frequently observed in these areas. There may also be a transformation into an osteoid tissue, which eventually may become dense bone.

The inflammatory tissue in the marrow-spaces may often be seen to extend upward through the degenerated cartilage, and may spread out for some distance on the surface. In some other cases there is found a comparatively large portion of atrophic fibrillated edematous cartilage, and only a comparatively small focus of inflammation in the underlying marrow-spaces, which probably has been the primary condition.

The processes which lead to deformity of the joint are produced in much the same way as is the adhesive type of arthritis. These further changes which may lead to deformity depend on several factors. The damaging agent is generally of less virulence and applied to the joint over a longer period than is the case in the conditions responsible for the adhesive types of arthritis. Frequently repeated infection of the subcartilaginous bone-marrow spaces may accomplish the same result. The numerous grades of deformity are determined in any case by the cessation of the causal condition affecting the joint or its continuance in varied severity and duration. It is the gradually progressive destruction of the cartilage induced by inflammatory conditions in subjacent marrow-spaces, and the consequent proliferation of new cartilaginous and bony tissues, which eventually are responsible for the extreme deformities which are so commonly observed in chronic arthritis. Another factor which must not be neglected is the tendency of all the joint-structures, the synovial membrane, the cartilage, both perichondrial and hyaline, and the endosteal tissues in inflammatory and proliferative states, to metaplasia. In all cases of arthritis the synovial membrane shows considerable reaction. At first it is simply congested; later its lymphoid elements become hyperplastic and it assumes a villous appearance. Fibrous changes may occur in these villi, and finally cartilage or even bone may be produced. The loose bodies found in so many arthritic joints are chiefly composed of cartilage or bone, and for the most part are detached inflammatory metaplastic synovial proliferations.

Cartilage is thus more or less interchangeable with fibrous tissue in the joints. It is not uncommon to notice when the joint cartilage is becoming atrophied that it becomes calcified or transformed into a fibrillated structure closely resembling fibrous tissue. Also perichondrial fibrous tissue commonly becomes changed into typical hyaline cartilage. The deeper layers of the cartilage may also proliferate, forming large nodules of hyaline cartilage or bone. The greatest metaplasia, however, is found in the subcartilaginous inflammatory process, where bone or cartilage as a rule tends to be formed.

1. Milne, L. S.: Chronic Arthritis, Jour. Path. and Bacteriol., 1911-1912, xvi, 199.

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In cases of somewhat more severe infection the cartilage appears to have become completely destroyed, and in those situations most exposed to friction, the inflammatory tissue which has replaced it tends to become transformed into an osteoid tissue by the action of the endosteal cells. Finally, this osteoid tissue becomes dense bone, which, to the naked eye, appears eburnated. When the involvement of the joint is extensive, the joint-surface is really wholly reconstructed, the original cartilage having completely disappeared. In some severer cases the entire articular surface of the joint seems to be transformed into an irregular, pitted layer of bone. This might represent what is often termed the atrophic type of arthritis deformans.

As these inflammatory processes, however, do not usually extend uniformly under the entire joint-surface, portions of cartilage generally survive, and this cartilage which has escaped destruction generally shows evidence of considerable proliferation. The perichondrial layer plays an important part in this regeneration of cartilage, but the deeper layers of the surviving joint-cartilage are also particularly liable to form hyperplastic nodules of cartilage, as frequently seen in old-standing cases of arthritis. These masses of cartilage, whether derived from some persisting remnant of the original cartilage or from a metaplasia of endosteal inflammatory tissue, may assume a very considerable size indeed; in some such cases these cartilaginous proliferations aided by new bone formation and extensive destruction cause very marked deformities, and luxations and ankylosis without adhesions also seem to result. This process may be associated with no enlargement of the joint, yet in others this reconstruction has caused marked enlargement of the end of the bones, the so-called hypertrophic form of arthritis deformans.

A great variety of conditions may then be responsible for the production of identical clinical and pathologic types of joint-disease. Also very varying types of arthritis may be produced by the same etiologic factor, depending on the severity and duration of the infection. Thus in gonorrhea, for example, almost every type may be produced. There may be a simple serous or purulent synovitis which completely recovers, or a chronic synovitis with or without effusion. The cartilage may or may not be damaged, depending on the severity of the inflammatory changes in the subjacent marrow-spaces. The extent of damage to the cartilage may therefore be very variable, from a few pits on the surface to complete bony ankylosis or marked deformity caused by destructive processes and consequent reparative proliferative changes in the cartilaginous and bony tissues of the joint.

At any stage in these processes which are responsible for the production of arthritis deformans — infection from tonsillitis, pyorrhea, endometritis, etc. — the disease may become limited with the cessation of the particular etiologic factor, and, clinically one can observe cases which have become stationary in every conceivable stage of the disease. Or the disease may be progressive for months or years, producing every grade from the mildest to the worst cases of arthritis deformans.

In most cases of chronic arthritis the inflammatory processes in the marrow-spaces occur in a somewhat limited region immediately subjacent to the joint-cartilage. Sometimes, however, they are more wide-spread in the bone and a real osteo-arthritis is produced. In such cases very marked irregularities on the surface of the bone, for some considerable distance away from the joint, may be produced.

In Charcot joints, as found in tabes, there is perhaps greater deformity than in any other joint-disease. To some extent this condition is due to trophic changes resulting from damage to the nerve-supply of the joint. This can readily be seen in the marked atrophy which occurs in the bony trabeculae, the crucial ligaments and other structures of the joint, yet inflammation also plays a considerable part in its production. In these Charcot joint cases there is generally a very excessive synovial inflammatory process. The synovial tags are large, often pedunculated, and frequently more or less cartilaginous. There also are generally found large numbers of rounded cartilaginous or bony loose bodies in the joint, most of which have been derived from the thickened synovial villi. The articular cartilage has for the most part become disintegrated and its place taken by fibrous tissue. In parts, however, this tends to become eburnated, following the formation of new bone by the endosteum of the inflamed subcartilaginous marrow-spaces. The cartilage tends to become extremely hyperplastic and to form large cartilaginous nodules toward the periphery of the articulation, where it has escaped destruction by the inflammatory process. Not only are these Charcot joints produced by some inflammatory process, but in certain places this has a definite syphilitic type.

Independent of any association with disease of the nervous system, syphilis may be responsible for considerable changes in the joints. Effusions into the joint from syphilitic changes in the synovial membrane are not uncommon, especially in congenital syphilis. So also inflammatory changes in the marrow-spaces underlying the cartilage may cause considerable thickening of the ends of the bone and be associated with some destruction of the cartilage.

In tuberculosis of the joints, much the same series of events may take place as in the other forms of arthritis. The tuberculous process may, and often does, settle down in the synovial membrane and produce a chronic synovitis with effusion into the joint. In such cases there may be no involvement of the bones, and therefore no bony deformity. In many cases, however, the tuberculous infection begins or may occur in the layer of marrow-spaces immediately subjacent to the joint-cartilage, as do many of these infective agents which also tend to produce chronic arthritis. The tuberculous process extends up through the overlying cartilage and so produces the characteristic carious appearance of the joint-surface in such cases.

SUMMARY AND CONCLUSIONS

It may then be summarized that practically all cases of chronic arthritis are due to some infective agent, and the great variety of types depend largely on the severity of the infective agent and the duration of time to which the joint is exposed to it. In any event, definite inflammatory lesions either in the synovial membrane or in the marrow-spaces under the cartilage account for all the pathologic changes in the joints in arthritis of all varieties. Certain infective agents tend to produce synovitis with serous effusion, others cause a purulent exudate. This may be completely recovered from or the synovitis may become chronic. In such cases the joint-cartilage may or may not be damaged. In the more severe infections the cartilage is disintegrated in front of inflammatory changes in the underlying marrow-spaces. The latter process may be very exten-

sive, destroying the whole cartilage, or it may be localized. If the cartilage is rapidly disintegrated, fibrous adhesions between the two adjacent damaged joint-surfaces are apt to be formed, and eventually these adhesions may become osseous, and complete bony ankylosis results. If, however, the damaging agent is not so virulent and its action is continued for a long period of time, the joint surface becomes very irregular from hyperplasia of the surviving cartilage, and bony and cartilaginous metaplastic changes occur in the inflammatory tissue which has replaced the cartilage. If at any time the infective process should be discontinued, then the pathologic changes in the joints will no longer be progressive.

An understanding of the pathology of arthritis is essential to the successful treatment of this condition. Some inflammatory focus may be discoverable which may be the etiologic factor, and by the cure of this condition the joint-disease may become limited or cured. One must not, of course, because some infective focus such as pyorrhea, for example, exists, immediately conclude that it is the cause of arthritis. All possible sources of infection must be searched for and treated accordingly. It is remarkable, however, how many cases of progressive arthritis which may for long be only a recurrent synovitis, but which tend eventually to develop into pronounced arthritis deformans, are due to pyorrhea. In this case certain streptococci of comparatively low-grade pathogenicity are the usual causes of the joint-changes. In these cases, as in others with no pyorrhea, streptococci, some of which are capable of producing arthritis in animals, may sometimes be demonstrated in the urine or feces. The examination for any bacterial content in the urine is of value in any case of acute or progressive arthritis. In cases of constipation associated with arthritis, the old metabolic type, the most common organism which seems to be responsible, appears to be a streptococcus. Certainly such cases often show a large proportion of streptococci in the feces, and vaccines made up from these often profoundly influence the resolution of the joint-changes. Elimination of the source of infection then and a course of vaccination with the particular organism which is entering the system, if this can be found, will in most cases tend to improve vastly or limit if not cure the disease processes occurring in the joints.

Should the case present itself, however, as is often seen, with no signs of any infective process, and the disease be stationary, and even after marked deformities have resulted, yet, as regards treatment, a great deal can still be done. Should the spine have become greatly curved, this may be considerably straightened in many cases in which on roentgenoscopy, no bony ankylosis is found, and this new position maintained by a cast. Locomotion may in this way be much improved. It is remarkable in how many cases of spinal arthritis the back seems to be absolutely rigid, yet under a deep anesthesia this relaxes markedly. Should the knees have become ankylosed by fibrous adhesions in the fully flexed position, forcible extension is often advisable. Some patients who have been bedridden for years can in this way be made to walk comfortably. If bony union has occurred in the flexed position, then extension, if this be desired, can be accomplished only by some open surgical procedure. Should the knees be ankylosed in the extended position it is often the best possible result. In certain cases of chronic synovitis with persistent effusion and considerable damage to the cartilage, walking is almost impossible. No amount of vaccines or general treatment could possibly cure such cases, and removal of the joint surgically gives the best results.

Each individual case presents a special problem by itself, yet arthritis is not the hopeless and necessarily progressive disease it has generally been considered; indeed, at any stage much may be done which can vastly improve the condition of the patient and the function of the damaged joints.

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HYDROPHOBIA IN A WILD PHILIPPINE MONKEY

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MANILA, P. I.

The subject of hydrophobia in the Philippine Islands has been investigated by Ashburn and Craig (1907), Dudley (1908) and Dudley and Whitmore (1910). These showed conclusively that the disease exists among Philippine dogs. The following case is recorded as throwing some light on the endemicity of the disease.

A large monkey was brought to this laboratory as one of a number purchased for experimental purposes. The native who delivered the animal stated that he had been caught the previous day in the bosque (forest) in Laguna province.

The animal appeared unusually excited when received, the following day became savage and frothed at the mouth and on the third day died with paralysis of the hind legs and muscles of deglutition. At necropsy there were no macroscopic lesions to suggest a cause of death. Microscopic examination of the hippocampus showed Negri bodies in both smear and section. Emulsified brain-tissue that had been kept in glycerin for one day was inoculated subdurally into a rabbit. On the twentieth day thereafter the rabbit had a period of spontaneous excitement followed by paralysis of the left hind leg and a few days later the right hind leg. It soon improved, but a partial paralysis continued to the sixtieth day, when it had a short spell of excitement and died with opisthotonos. At necrospy, coccidia were found in the intestine, as in practically all rabbits here, and there was a streptothrix tumor of the jaw. Neither of these appeared to be a factor in causing death.

The brain showed no evidence of injury at the site of inoculation. Negri bodies were found in both smears and sections from the brain. The long incubation period and the protracted course of the disease were due to the usual attenuation of the virus by passage through monkeys.

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Blood and Conservation of Energy.—It is said that Mayer, before the announcement of the physical law of the conservation of energy, had observed while traveling as a ship's surgeon in the tropics that the venous blood of his patients, in the days when blood-letting was still in vogue, was appreciably brighter in color than was ordinarily found in the temperate zones. He concluded from this that there was a definite relation between chemical action in the blood and the amount of work or heat furnished by the body. From this he deduced the law of the conservation of energy.—*Scientific American.*

ABDERHALDEN SERODIAGNOSIS OF CANCER

WITH A TABULATION OF RESULTS OBTAINED IN FIFTY EXAMINATIONS

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Emil Abderhalden has demonstrated the presence of what he calls "protective ferments" in the blood of animals produced as the result of experimental stimuli and physiologic and pathologic conditions. When he gave to the world his pregnancy test he was not unmindful that his biologic test might be the key to a vast, undeveloped field in seropathology. The results that are being obtained by those working with his test in cancer seem to demonstrate that there is a ferment produced in this disease similar in its action to that produced in the physiologic condition of pregnancy. The ferment produced in the cancerous state seems to be quite as specific as that obtained in pregnancy. One would expect that a ferment, if produced at all, would be elaborated more vigorously in a pathologic process than would be necessary in a purely physiologic one. It would also appear that a person in apparent good health, possessing a cancerous growth, might elaborate a stronger ferment than a person far advanced with the disease. This has been shown to be the case in both instances, as indicated by the apparent increase in the density of the color reactions in my cancer cases as compared with my pregnancy reactions, and in that Brockman finds that healthy cancer patients give a denser reaction than patients well advanced with the disease.

My tabulations necessarily vary considerably from work previously reported, inasmuch as it has been impossible for me to secure serum from more than a few known cancer cases, the larger number being secured from cases suspected of being malignant. A considerable part of my work has therefore been clinical as well as experimental. The cases were secured largely from patients presenting themselves to the physicians of Rutland and vicinity.

I thank these physicians for making this experimental work possible.

The classifications appearing in this article were suggested by ideas secured from that part of Vaughan's recent work on protein split products, dealing with the specific ferments of the cancer-cell, in which he argues that "all unicellular forms of life contain ferments which he would designate as soluble or extracellular, and insoluble or intracellular." Generally speaking, the soluble ferment is a ferment that is destructive in its action on complex protein molecules, though in some instances it is known to be constructive. The general function of the soluble ferment is to reduce a cell's food-supply to its simplest form ready for assimilation as the cell takes up its proteins only as amino-acids or "building-stones" of Abderhalden.

The action of the intracellular or insoluble ferment is to assemble the "building-stones" which are to form new cells and to sustain their function, identical with that of the parent cell. The chemical composition of a cell, therefore, is necessarily as varied as is its structure and function. While the unicellular organism is taken to illustrate cell activity, it is when cells of various types are associated together, as in the more highly developed forms of life, that we have quite a different and more complex problem to consider. We know that certain cells in all the higher forms of life multiply, some faster than others, the rate varying according to type and function. What maintains this balance, inhibiting some and accelerating others? Vaughan argues, so far as cancer is concerned, that "it seems possible to conceive that a cancer-cell is one that has lost its power of forcing its reproductive ferment back into an inactive stage. It is a cell whose chemical nature had become so altered that the reproductive ferment is uppermost and can no longer be influenced by outside stimuli."

He argues that there is an "antiferment" produced on the part of the system invaded that is capable at times of completely digesting the cancer-cell invasion, thus curing the disease. He states that when the disease has advanced to the appearance of tumor formation the system is then seldom, if ever, able to throw off the disease. Accordingly, it would not seem out of place to associate the "protective ferments" of Abderhalden with the "antiferments" of Vaughan, as being one and the same fe.ment in the serum of a person affected with malignant disease that causes the digestion of a cancer protein in the dialyzing thimble.

TABLE 1.—ABDERHALDEN SEROREACTION IN FIFTY-ONE EXAMINATIONS

Clinically Malignant			Suspiciously Malignant			Clinically Non-Malignant		
Known Location	Reaction		Probable Location	Reaction		Remarks	Reaction	
	Pos.	Neg.		Pos.	Neg.		Pos.	Neg.
Breast	4	..	Sigmoid	1	..	Pregnant	4	6
Uterus	2	..	Stomach	5	3	Suspicious pregnant	..	4
Stomach	1	..	Cong. nevi	1	1	Normal male	..	1
			Liver	1	1	Thyroid	..	1
			Uterus	7	..			
			Gastro-Intestinal	..	1			
			Bladder	2	1			
			Cervical lymph-node	1	..			
			Breast	..	1			
			Thyroid	1	..			
			Testicle	1	..			
Total	7	..	Total	20	8	Total	4	12

Therefore, one working with the Abderhalden reaction, according to Vaughan, may obtain positive reactions in two classes of cases: First, occasionally clinically normal persons who have at some time or other possessed a cancer invasion which had been entirely eradicated, and, secondly, all cases possessing even the slightest malignant tumor formation. The latter class may rightfully be divided into two subdivisions—those suspiciously malignant and those clinically malignant. Pertinent to the foregoing classification is the accompanying tabulation of fifty-one serum examinations (Table 1). The table also briefly indicates the probable or the known location of the malignancy or the nature of the condition if the serum was obtained from other than cancer patients.

The cancer protein used in these examinations was obtained either from an abdominal lymphosarcoma or from a cancer of the breast, except when otherwise specifically mentioned.

In each of six cases clinically malignant, without regard to the location of the lesion, the reaction was positive.

Of the twenty-eight suspiciously malignant conditions examined, twenty gave a positive reaction. The reaction has been verified in all of the twenty cases by: (*a*) roentgenograms in three persons; (*b*) postoperative microscopical section in ten instances, and (*c*) definite subsequent history in seven cases.

In the man with a cancer of the sigmoid the interpretation of the roentgenograms was verified by the Mayo brothers, as the plates accompanied the patient when he went west for operation. He was sent home, however, without an operation, as they also considered his condition inoperable. He died shortly after his return home, and as no necropsy was permitted, his exact pathologic condition could not be determined. The second case with positive roentgenograms has not been verified further than that the condition of the patient continues clinically malignant, and that her family history was distinctly bad, as she had a sister, mother and aunt die with the disease. The third case is interesting in that the roentgenograms with the Abderhalden test were positive before operative procedure. The diagnosis was verified by the operation when a gastro-enterostomy was done to relieve the pyloric obstruction. The pyloric end of the stomach, upper portion of the duodenum and the head of the pancreas were involved in the malignant process. The patient died a few hours after the operation from shock. Tissue removed at a partial necropsy verified microscopically the previous laboratory findings. This case created considerable interest among the hospital staff, as but few seriously entertained a diagnosis of cancer involving the pylorus; consequently there was no little comment when operation and microscopic section verified the diagnosis.

Space will not allow of a detailed description of the ten cases in which the test was confirmed by microscopic section, except to state that: 1. The positive reaction in the patient with enlarged cervical lymph-nodes was confirmed at operation by the Mayos, who reported the tumor to be a cancer of the thyroid gland. 2. Microscopic section confirmed the positive findings in one of two cases of congenital nevi, both clinically and macroscopically almost identical, but the positive one showed on microscopic section that it was an angiosarcoma instead of a benign bloody tumor. 3. Microscopic section of testicular tissue removed by operation was first passed on as tuberculous, but a subsequent positive Abderhalden suggested a more careful examination, and the diagnosis had to be changed to that of cancer of the testicle, which diagnosis was confirmed by another pathologist.

Realizing that subsequent history is generally indefinite and of little actual worth, I have only to say that in this group the most conspicuous confirmation was in one of the papillomas. The positive reaction in this instance was obtained July 29, 1913. The patient at that time was under treatment and was not considered clinically malignant, and the Abderhalden reaction considered probably erroneous. The growth was frequently fulgurated and appeared for a time to be disappearing, when it rapidly began to assume an entirely different aspect the early part of last September. One month later the propriety of continuing the fulguration was abandoned as useless. The patient is now finishing his days with a clinically malignant bladder.

The test was erroneous in two instances as determined by a microscopic section in one instance and gross necropsy findings in the second. The first case was supposed to be a uterine malignant tumor, but a careful microscopic study following operation failed to reveal any cancerous areas. The second error was in a woman with a previous tuberculous history, presenting an enlarged uterus with abdominal complications that were suggestive of a possible pregnancy and a less probable malignancy. Necropsy findings a few weeks later revealed an extensive miliary tuberculosis involving all the abdominal organs.

Of the three remaining cases under observation two are developing suspicious symptoms. On the other hand, in none of the negative cases in this group have suspicious manifestations developed, and the recovery of the patients has seemed permanent. Four of the negative cases were associated with negative roentgenograms. Incidentally the Roentgen ray, when associated with the bismuth meal, has gone a long way in determining lesions of the gastro-intestinal tract. The roentgenogram quite readily locates the lesion, but it is not always able to determine the exact pathology. The considerable number of carcinomatous growths that appear to be engrafted on old ulcers of the stomach or duodenum often leaves a doubt as to whether the roentgenogram shadows a simple or malignant condition. The Abderhalden test, though in an experimental stage, should at least be used in all cases in which the roentgenogram is at all questionable. In no branch of surgery may it be of so much use as in that of the gastro-intestinal tract.

TABLE 2.—FINDINGS WITH PREGNANT SERUMS USED AS CONTROLS

Clinically Pregnant			Suspiciously Pregnant			Known Not Pregnant		
Known Duration	Reaction Pos.	Reaction Neg.	Probable Duration	Reaction Pos.	Reaction Neg.	Remarks	Reaction Pos.	Reaction Neg.
Abortion, 3 mos.	2	..	Three months	3	..	Cancer of stomach	..	2
Full term	8	..	Four months	1	1	Cancer of uterus	1	3
3-4 months	1	..	Six weeks	2	..	Cancer of sigmoid	..	1
						Normal male	..	1
						Suspicious mal.	5	12
						Epithelioma of bladder	2	..
						Neurotic fem.	..	1
						Cancer of testicle	1	..
						Cancer of breast	..	2
Total	11	0	Total	6	1	Total	9	22

I can add nothing as to the four positive findings of sixteen examined, clinically not malignant, except to call attention to the fact that each occurred in full-term pregnant women, and that in each case the cancer protein used was obtained from a cancer of the uterus. Consequently, I have discarded uterine tissues, as they appear unreliable.

Table 2 tabulates the findings with pregnant serums used as controls for my technic with the cancer work. I was not aware at the beginning of my experimental work that Epstein had used cancer and placental proteins together; consequently my work has been to confirm the earlier and more extended work of Epstein, in that serums from cancer cases will not digest placental tissue, nor will pregnant serums digest cancer proteins. This holds true in my cases provided no tissue for the

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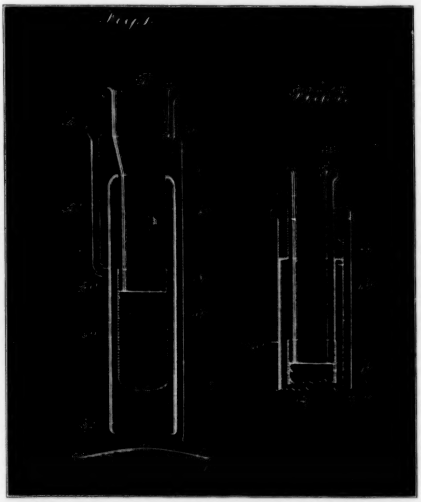
malignant test is obtained from a cancer of the uterus. If such tissue is used, pregnant serums will at times give an apparently malignant reaction because of the fact that pregnant serums will digest uterine as well as placental tissue (Lindig). It must be that the uterine cells in the tissue in such cases are digested instead of the cancer-cells.

Eleven known pregnant women reacted positively to the test.

Six of seven suspiciously pregnant women reacted positively. One of the six, as previously reported, denied the possibility, but admitted her true condition when informed that the blood-test showed what it was. An examination revealed a two and one-half to three months' pregnant uterus. The single negative reaction in this group is interesting in that the correctness of the negative finding was proved by operation. A woman presented herself at the hospital with a marked right-sided pelvic inflammation that required immediate surgical intervention. She also appeared on examination to be about four months pregnant. The pregnancy test was asked for, and run with a negative reaction. Operation revealed an extensive peritonitis (involving the right tube), which produced such a thickening of the pelvic parietal peritoneum that it was taken to be an enlarged uterus. The uterus, however, was non-gravid. There are two glaring errors in this set of cases. Two girls, possibly illegitimately five weeks pregnant, reacted positive, but later proved to be not pregnant. The blood was taken about 2 p. m. in each case and run that evening ready for the incubator. It is probable that amino-acids of digestion caused the error in each case, instead of faulty technic, as the placental tissue was carefully tested before use. Since these errors, which are Nos. 16 and 17 in my series, I have taken the blood, for diagnostic purposes, on an empty stomach in the early morning, with but a very few exceptions.

The positive findings in persons known not to be pregnant present an interesting subject for study. Lindig found that tumors of the genital tract caused the production of a ferment that was capable of digesting ovarian and uterine, as well as placental tissues. I have had three males with tumors of the genital tract that possessed a similar ferment, that is, a ferment that digested placental tissue. One of these cases, previously referred to, was a cancer of the testicle; and the other two were malignant papillomas of the bladder, one of which has been verified by microscopic section, the other by a clinical history, as already described. No male with a malignant growth elsewhere has produced a ferment that affected placental tissue in the least. The other cases, with positive reaction, though patients were not pregnant, were all in women with a questionable uterine history. Kabanow finds a similar selective action of ferments mobilized as the result of gastro-intestinal disturbances. Normal tissue is digested similarly to that diseased with a negative reaction to normal tissue from other portions of the digestive tract. The various sections of independent ferment production seem to be governed by the difference of functional activity. This selective action of certain ferments suggests the probability that the "protective ferments" of Abderhalden or the "antiferments" of Vaughan are produced by a group-cell activity of the tissue invaded. Whether it represents a dual action of the extracellular ferments or is produced independently by the cells for the one purpose, is open to discussion. In either case it suggests the possibility of being able to determine roughly the location of certain classes of tumor manifestations. These group reactions would seem to demonstrate that the blood-serum is in reality a means of conveyance rather than the place of production of the special ferments.

My work with the Abderhalden biologic test has impressed me with two sources of error when using the usual uriometer jar or large test-tube as an improvised dialyzing apparatus. One is the bacterial contamination of the thimble and its contents, when filling the thimble outside the dialyzing chamber. The second and more serious possible error is the danger of getting a drop or so of the blood-serum, or a speck or two of the protein material, on the outside wall of the dialyzing thimble. While the precaution of rinsing the thimble with distilled water before placing it in the improvised dialyzing chamber has always been taken, there necessarily remained an uncertainty as to the complete removal of the serum or tissue by such washings. In order to prevent these uncertainties, I have had made by Eimer and Amend of New York, and have used for some time past, the apparatus shown in Figures 1 and 2.



Figs. 1 and 2.—Two forms of apparatus for performing the Abderhalden serodiagnostic examination.

There is shown at 10 a container 1 inch in inside diameter adapted to be supported in upright position 5 inches high on a base (11) and of a preferably tubular cylindrical form. This container provides a chamber (12) into which the desired solution is to be placed. The upper end of the container is provided with a mouth which may be formed in the construction as shown in Figure 1, by an integral shoulder (14) ground on a preferably conical taper.

At 15 there is shown a combination stopper and funnel of substantially tubular form, having near its upper end an enlargement or shoulder (16) which is preferably ground on its outer surface to conform with the surface of the shoulder (14) against which it is adapted to be seated, making a substantially hermetic joint between the stopper and the container mouth. The

upper end or mouth (17) of the funnel is normally open for the reception of protein and blood-serum to be used for the test, introduced into and through the funnel (15) to the attached thimble (19) at 18, which should have an outside diameter of 11/16 inches. The mouth (17) should be closed preferably by a cotton plug. Because of the definite connection between the funnel and container mouth, the thimble will be maintained at the proper level, and in a centered position with respect to the inner wall of the container and out of contact, therefore, with it.

The container is provided with a lateral opening (20) with the tubular extension (21) 1 inch below the shoulder for the dual purpose of equalizing the atmospheric pressure, and also of providing a means for introducing into the chamber (12) liquids at any time during the progress of the test without having to remove the funnel-stopper with attached thimble.

The form of apparatus shown in Figure 2 includes a container 10^1 of a simpler form than that above described. Instead, however, of providing ground connections immediately between the filling-funnel and the mouth of the container, a rubber gasket (22) serves the purpose of making a substantially air-tight seal for the chamber (12), and at the same time serves the purpose of maintaining the thimble (19) in spaced relation to the walls of the container and at a proper level in the solution contained therein. All the other features of the apparatus are identical with the description of Figure 1.

When the container has been filled with the required amount of distilled water and the parts assembled it is ready for sterilization with live steam, after which there is no part of the technic that requires or allows of the exposure of the outer surface of the dialyzing thimble, a feature readily recognized as a safeguard in performing the Abderhalden serodiagnostic examination. The necessary chloroform and toluol may readily be added to the sterile distilled water through tube 21 or hole 20 by means of sterile pipets. The top of 21 should be closed with a cotton plug in Figure 1. In Figure 2, hole 20 may be closed with a strip of adhesive plaster, which serves the added purpose of making a good place for necessary notations. Otherwise the technic of the test is the same as previously described by various writers.

REPAIR OF TENDONS BY FASCIAL TRANSPLANTATION

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The free transplantation of tendons to repair defects in other tendons resulting from trauma or infection has become a well-recognized surgical procedure. The tendon of the palmaris longus has been used in most of the cases in which free transplantation has been attempted, for it can be removed without interfering with the function of the wrist or hand. When a number of tendons are to be repaired — for example, when the common extensor tendons of the fingers are to be repaired or when long defects exist in the tendons—enough material may not be supplied by the palmaris longus tendons and another source of supply for material for transplantation must be looked for.

Experimentally, it has been demonstrated that fascia behaves much like tendon when transplanted, and that long defects in tendons may be bridged by tubes of fascia; and that tendon, which cannot be differentiated from the tendon which has been destroyed, develops to repair the defect.

The repair of defects in tendons by means of fascial tubes has not been resorted to frequently in man, the direct transplantation of tendon having been attempted oftener. The following case is reported because an opportunity was offered later to examine the tendon which had formed within the fascial tube, and also to study the fate of the transplanted fascia.

History.—Dr. W. K., aged 32, was admitted to the Presbyterian Hospital, Jan. 26, 1913. Fourteen months before a patient had bitten the ring finger of his right hand. Soon a severe infection developed which necessitated removal of the terminal and a part of the middle phalanx of the ring finger thirteen days after the injury was received. Finally both the

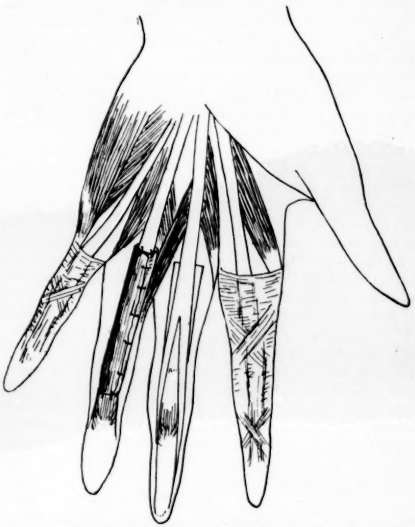

Fig. 1.—Diagrammatic sketch to show tube made from fascia lata which surrounds the proximal ends of the tendons and is attached distally to the periosteum. If the tendons are to be attached separately two fascial tubes are used.

sublimis and profundus tendons were removed, the incisions continuing to discharge for two months after the first operation.

Examination.—The terminal phalanx of the ring finger is absent. The end of the middle phalanx has also been removed, the bone lying close to the skin which seems, however, to be well nourished. On both the volar and dorsal surfaces of the finger are longitudinal scars which extend to the middle of the hand. The scar on the volar surface is somewhat hypertrophic. There is no flexion of the middle phalanx. The proximal phalanx can be flexed by the lumbricales and interossei. The skin on the volar surface is somewhat adherent at the site of the longitudinal scar, but it can be moved fairly well over the subjacent tissue on either side of it. In the middle of the palm of the hand, at about the transverse fold, there is some slight enlargement and resistance, which probably indicates the position of the retracted and attached ends of the flexor sublimis and profundus tendons.

Operation.—Jan. 27, 1913, an attempt was made to repair the tendons and prolong them to the end of the middle pha-

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lanx, part of which, as stated above, had been removed. An incision was made at the side of the finger and a volar flap was raised. Considerable scar tissue was found, but enough tissue could be carried up with the flap not to interfere with its integrity. The incision was carried through the interdigital fold into the palm, for the ends of the tendons were so adherent that considerable dissection was required to free the tendons in order that a fascial transplant might be inserted, so that when they contracted their action would be transmitted to the transplant and not expended on tissues adjacent to it. After the tendons were dissected free an incision was made into

Fig. 2.—Tendon which formed following the operation. The finger was amputated 255 days after the fascial tube was inserted. The fascia remains intact, forming a sheath for the tendon which has developed from the proximal ends of the flexor sublimis and profundus tendon. The two tendons, separated by a thin connective-tissue septum, can be distinguished in the tube.

the thigh and the fascia lata was exposed. A strip of fascia measuring about 3½ inches in length and ½ inch in width was then removed, a thin layer of subcutaneous fat being left attached to the transplant. The fascial transplant was then placed back of the tendon, one end of the transplant was sewed around the tendons, and the other end was attached to the periosteum at the end of the middle phalanx. The surface covered with fat was placed so that it would form the inner lining of the fascial tube. This was done with the idea of furnishing to the tendon, which we hoped would develop, a layer of tissue which would permit of its sliding within the fascial tube. We hoped to reproduce much the same conditions that are found in the osteo-aponeurotic canals and synovial sheaths normally. After the fascial tube had been completed by a layer of fine chromic catgut sutures, which united the edges of the transplant anteriorly, the skin flap was sutured back into position with fine beeswaxed silk and a dry dressing was applied. No immobilizing dressing was used, for motion was desired and encouraged immediately after the operation.

Result.—Active motion was so painful at first that not much was attempted until seven or eight days had passed. The patient reported occasionally after the operation. Within six weeks a definite rounded band, which rolled under the skin, could be felt. When flexion of the phalanx was attempted this band became more prominent, leaving the surface of the bone. When the band was held against the bone a greater degree of flexion could be obtained. Finally the middle phalanx could be flexed to about 80 degrees. As the patient was about to leave institutional work to enter private practice, he wished the finger removed for cosmetic reasons; the crippled finger, moreover, interfered somewhat with his work, notwithstanding that considerable improvement in function had followed the insertion of the fascial transplant. Oct. 9, 1913, the finger was removed under novocain anesthesia, the amputation being made through the head of the metacarpal bone. When the specimen was dissected a well-formed tendon was found. This differed from a normal tendon in the lack of luster only. In all other respects it resembled closely a normal tendon. When the tendon, which was about 3½ inches in length, was divided transversely, the original fascial tube could be seen. It contained tendinous tissue. Both the sublimis and profundus tendons had proliferated into the tube, for each tendon could be seen separated by a delicate fibrous septum. The newly formed tendon is represented in Figure 2.

Histologically the fascia is well preserved. The nuclei stain well and the bands of fibrous tissue are very similar to those found in normal fascia. Fascia when transplanted usually becomes somewhat edematous and infiltrated with leukocytes. These changes, however, occur early and after twenty-four days the transplanted can hardly be differentiated from normal fascia. The thin layer of subcutaneous fat transplanted with the fascia has disappeared and the newly formed tendon which has formed as the result of the proliferation of the tendons inserted into the fascial tube, is closely adherent to the transplanted fascia. The tissue filling the tube is tendinous in structure, well-developed bundles of fibrous tissue being separated by delicate connective-tissue septa. There is no histologic evidence that this tissue has developed from the fascial transplant. The transplant has apparently merely acted as a tube which has directed the growth of the proliferating tendons.

These findings are not in accord with those of Kornew,[1] which are based on experimental work on rabbits and dogs. He believes that, when a fascial tube is inserted between the cut ends of tendons, the fascia proliferates to form the tendon and very little of the new tendon is formed by proliferation from the ends of the divided one. The findings in the case which we have described would indicate that the fascial tube plays a passive rôle in the development of the new tendon. Experimental work has already demonstrated the value of fascial tubes in the repair and reconstruction of tendons. This method has not as yet been extensively

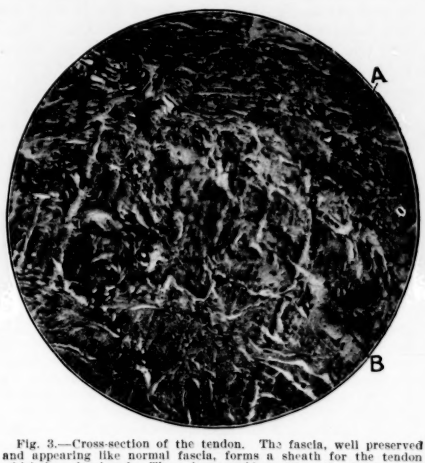

Fig. 3.—Cross-section of the tendon. The fascia, well preserved and appearing like normal fascia, forms a sheath for the tendon which has developed. There is no evidence that the fascial tube plays an active part in the formation of the new tendon. It forms merely a canal along which the tenoblasts of the divided tendons proliferate. A, section through transplanted fascia. B, section through new tendon.

employed and this case has been reported to show the functional and anatomic possibilities.

As Rehn[2] has recently shown, some loss of motion occurs in transplanting flexor tendons into the fingers,

1. Kornew, P.: Ueber die freie Fascien transplantation, Beitr. z. klin. Chir., 1913, lxxxv, 144.
2. Rehn, E.: Klinischer Beitrag zur freien Sehnenverpflanzung, Arch. f. klin. Chir., 1913, cii.

because the transverse aponeurotic bands are lost. The loss of these bands permits the tendon to leave the bone when the muscle is contracted, resulting in some loss of motion. This was indicated in the case reported, for a greater degree of flexion of the phalanx could be obtained by holding the tendon against the bone. In one of Rehn's cases a ring was worn to accomplish this purpose.

Fascial tube repair of tendons offers much in plastic operations on the extensor tendons of the fingers. There may be some limitation of motion after repair of the flexor tendons because of destruction of the transverse bands. Besides the flexor tendons are closely grouped in the palm and there is a finer mechanical adjustment than there is in the common extensors.

THE DIAGNOSIS OF SPINAL CORD TUMORS

WITH REPORT OF TWO CASES

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Through the wonderful advance in modern surgery, the spinal cord as well as the brain has become readily accessible, hence an early and accurate diagnosis of spinal cord tumors is of the utmost importance. The only hope for permanent relief lies in the earliest possible removal of a new growth, before irreparable injury to the cord has taken place.

The two following cases, which occurred in the services of Dr. I. Abrahamson, to whom we wish to express our indebtedness for the courtesy of observing and reporting them, are of great interest from this point of view. The first illustrates how syphilis not of the central nervous system may mislead one, while the second is peculiar in its onset and course.

CASE 1.—Mrs. H. S., aged 55, born in Austria, entered Montefiore Home Nov. 17, 1911, complaining of pains and loss of power in lower extremities, loss of control of bladder and rectum, girdle sensation and tingling in lower extremities and right hand.

History.—The family history was negative except that the patient's mother had a wasting disease of many years' standing. The patient was always of a delicate constitution and had convulsions in early childhood. Her menstrual history was negative. She married at 21 and had nine healthy children, no miscarriages. At 25 she had a cystitis following childbirth. Ten years before admission she suffered from a chronic ulceration of the legs. Fifteen months before admission her present illness began and was insidious but progressive in its course. She first complained of tingling and pulling sensations which began in the soles of both feet and gradually ascended to the hips. A little later more or less constant pains developed about the middle of the spine, shooting downward into both legs, and later, stiffness and weakness of both legs appeared. The weakness was immediately preceded by a girdle sensation in the lower part of the abdomen. Three months after the commencement of her illness she could no longer walk. Two months previous to admission she lost control of bladder and rectum. A few weeks before admission she noticed a tingling sensation of the little finger of right hand. No diplopia, headaches, vomiting or convulsions were present at any time. When admitted the patient could neither stand nor walk. She lay on her back and could sit up only with great difficulty. Both lower extremities were flexed and extremely spastic.

Examination.—Double Babinski, Oppenheim, Mendel and Bechterew were present with double ankle-clonus. Both knee-jerks were lively. The lower abdominal reflexes were absent. The various reflexes of upper extremities were normal. Pupils reacted consensually to light, accommodation and pain. Gross motor power of the lower extremities was greatly diminished and the movements were carried out sluggishly and painfully. Passive movements were difficult to carry out because of the enormous spasticity. The spine showed no deformities, but there was a marked hypersensibility to pressure at the tenth, eleventh and twelfth dorsal spines. There was a slight hyperextension of the interphalangeal joints of the fingers. The cranial nerves were negative, save for a slight asymmetry of passive innervation of the face, the right being stronger; this difference, however, disappeared on active or emotional innervation. The lower extremities were covered with pigmented copper-colored scars varying in size from a millet-seed to a large pea. Over the middle of the outer aspect of the left leg there was a scar of an old ulceration. The feet were cold and

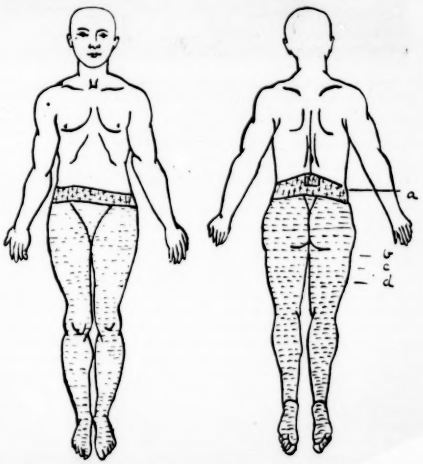

Fig. 1.—Chart of sensory disturbances areas found in Case 1. *a*, hyperalgesia; *b*, anesthesia; *c*, analgesia; *d*, thermanalgesia. Rectangle in lower dorsal region shows location of extramedullary tumor.

cyanotic. Decubiti were over both buttocks. A sensory test taken in January, 1912, showed a loss of all three sensations from the level of the mammae, down anteriorly and posteriorly. The sensory disturbances found in May, 1912, are best seen by the accompanying chart (Fig. 1). Vibration sense was absent in the lower extremities. Stereognostic sense was present.

The heart was normal; pulse 78; blood-pressure 150 mm. systolic and 120 mm. diastolic. Blood-serum, tested for the Wassermann reaction by Dr. D. M. Kaplan and Dr. D. Felberbaum independently, gave a strong positive reaction. The cerebrospinal fluid by Wassermann test at the same time, however, was negative. The spinal fluid registered 30 cm. by Nonne's apparatus, and was clear. Globulin reaction was positive. Albumin in excess and 25 cells were present in 1 cm. of fluid. On these laboratory findings the patient was given two full doses of salvarsan intravenously, followed by many intramuscular injections of mercuric bichlorid. The condition apparently improved a little, the level of the sensory disturbance became lower and there was some increase of motion.

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Diagnosis.—In analyzing this case, then, we have symptoms of compression myelitis, Wassermann plus reaction in the blood, and a slight improvement following a thorough course of antisyphilitic treatment. Therefore it is not at all surprising that a diagnosis of syphilis of the cord was adhered to for a long time. During May, 1912, however, after several very careful sensory examinations, a constant level was established. This, together with the symptoms previously described, especially taking into consideration the unbroken progress of the symptoms with their constancy, the decided tenderness over the spines of the tenth, eleventh and twelfth dorsal vertebrae and the narrow band of hyperesthesia above these vertebrae, conclusively proved that we were dealing with a constant lesion within the spinal canal, extramedullary, which was causing the compression, that is, a new growth and not a syphilitic process, in spite of the positive Wassermann and apparent improvement following treatment. An operation was therefore urged.

Operation.—June 14, 1912, Dr. Charles Elsberg removed an extramedullary tumor which was situated at the level of the ninth, tenth and eleventh dorsal vertebrae. The patient made a complete recovery from the immediate effects of the operation, but succumbed July 29, 1912, to the extensive decubiti and pneumonia.

Specimen.—The tumor was irregularly elliptical with a cauliflower-like surface, and measured ¾ by ½ by ¼ inches. It was situated between pia and dura being only moderately adherent. Histologically it proved to be a typical endothelium of psammoma type, probably arising from the pia. Permission was obtained to remove the spinal cord and at the level where the tumor had originally been located firm pia-dural adhesions were found (Fig. 2), and the cord was so completely compressed that it was divided into two parts, separated by a thin membrane, showing clearly the unfortunate result of prolonged compression and the impossibility of a restoration even after the removal of the cause.

CASE 2.—Mrs. E. G., a widow, aged 52, born in Russia, entered Montefiore Home March 21, 1913.

History.—Her family history was negative. The patient had always worked hard. She had had one live child and one miscarriage; menstrual history negative. Her present illness began one year and three months before admission, was of a rather sudden onset with severe temporal and occipital headaches, which were more or less constant and increased on lying down. Time of day made no difference; she often would be awakened from sleep by severe headaches. Six months after onset of disease the right hand and arm began to grow weak and somewhat painful and swollen. Two months later the right leg began to grow gradually weak. This improved somewhat, however, while the right arm progressively grew worse. During the two months previous to admission the left hand and arm began to grow weak, and about the same time the patient began to complain of dyspnea, precordial pains, dizziness, and spots before the eyes. Finally the difficulty in breathing became so severe that she was unable to stand or walk. She soon completely lost the power of right arm and developed incontinence of the bladder and rectum.

Examination.—Patient half lying on her back, propped up with pillows. Dyspnea and cyanosis evident; respirations 40 per minute. Right Babinski present. Flexion of the left toe and extension of the others obtained by plantar stimulation on left side. Right ankle-clonus obtained; left ankle-joint reflex obtained with difficulty. Right knee-jerk and patellar jerks lively and stronger than left. Abdominal reflexes not elicited, possibly because of the position of the patient. Reflexes of upper extremities absent, including the scapula. Both corneal reflexes were present and pupils reacted normally to light and accommodation; they were moderately dilated. The patient could move both ankles, left better than right. Flexion and extension of knees were present, but left was better than right. All active movements of right hand were absent, in left they were clumsy and the patient could not execute any finer movements, could not move right shoulder, and there was no resistance whatsoever to all passive movements, the condition being that of complete flaccid paralysis. Direct myotatic irritability was absent, and the muscles were in a distinct hypotonic state. Atrophies with electrical changes of the intrinsic muscles of the right hand were distinct. A sluggish reaction to both currents was obtained in the left hand. The skin was cold and dry and peeling in some parts. Subcutaneous tissue apparently was in a myxedematous condition. Cranial nerves were negative with the exception of the right eighth, which showed a distinct diminution of both air and bone conduction. The sensory disturbances are shown in Figure 3. Blood-pressure was 165 mm. systolic and 140 diastolic. Heart and lungs were negative. Wassermann reactions in blood-serum and cerebro-spinal fluid were also negative. Urine specific gravity, 1.025; albumin and casts were not found.

Diagnosis.—Various diagnoses were offered in the analysis of this case; chiefly among these were cardiorenal disease and arteriosclerosis of brain and spinal cord. One can readily see the reasons for such varied diagnoses, namely, the extreme dyspnea and cyanosis, palpable arterial changes with increased blood-pressure on the one hand, and the apparent hemiplegic type of paralysis with vague cerebral irritative symptoms such as are incidental to arterial changes on the other. Nevertheless, on close observation, the sensory findings, which were carefully charted and repeatedly found to be the same, together with the atrophies and trophic disturbances in the upper extremities, pointed toward an isolated segmental lesion in the cord. This was more emphasized by the absence of any objective cerebral symptoms, and the well-marked tenderness on pressure over the upper cervical vetebra and nape of neck, and an upper segment of hyperesthesia made it clear that here again we were dealing with a neoplasm of the cord. July 6, 1913 the patient died from symptoms of cardiac failure.

Fig. 2.—Extramedullary tumor removed in Case 1. Arrow points to growth.

Necropsy.—Dr. Felberbaum gave the following report in brief: Body that of a short, senile female. Fatty layer deficient. Pleural cavity free except for some adhesion over right apex. Pericardial fat increased, heart dilated. Mitral valves thickened, sclerotic and shrunken. Aortic valves thickened, and fatty atheromatous patches in aorta. Tricuspid valves normal, pulmonary valves thickened. Right ventricle and auricle much dilated and flabby. Heart muscles brownish; no hypertrophy of walls. Lungs congested. Subpleural hemorrhages on mediastinal surface of lungs with small ones on costal and diaphragmatic surfaces. Lung tissue dense, fibrotic and edematous. Liver, normal in size, with numerous patches the size of millet-seed immediately under the capsule. Liver substance very friable. Spleen very small; tissue dense but friable. Kidneys enlarged, cortex diminished and the capsule adherent in spots. Uterus small, endometrium thickened and polypoid. Gastro-intestinal tract negative. Brain normal in size, with well-marked convolutions; congestion present. Basilar vessels thickened and some plaque formation is seen.

When the brain was separated from the cord a brownish jelly-like substance was found replacing the region of the central canal of the lowermost portion of the medulla, and continuous with a similar condition of the upper part of cord. The cervical cord was enlarged throughout to about twice its thickness. This was caused by a new growth which occupied most of the posterior half of the cord, being especially extensive on the right, and replacing the commissures, the central canal, part of the anterior and posterior horns and columns. The growth is grayish, soft and well defined. It extends

down to the seventh cervical segment, and is more centrally located at this point and much less in extent.

Histologic Examination and Diagnosis.—In the pons the structure greatly resembles exuberant granulation tissue with its distended and tortuous arterioles, edema and fibroblasts, with here and there some round-cell aggregations. This process is apparently located around the central canal, but no cells of a malignant nature could be found. The mass which corresponds to the new growth in the cord is composed microscopically of broken-down material. Along the posterior margin between the entrances of the posterior roots a narrow strip is found containing peculiar dark-staining cells, varying much in size and shape, showing mitosis and frequently assuming a column-like arrangement. Here and there giant multinuclear cells are seen. The pia in this situation is greatly thickened and the cells previously described are also found in the pia which is intimately connected with the cord. The blood-vessels are sclerotic, and many ganglion cells of the anterior horns show various stages of degeneration. In the lower part of the cervical cord where the pathologic condition is central, none of these peculiar cells can be found and the condition is merely an area of degeneration with

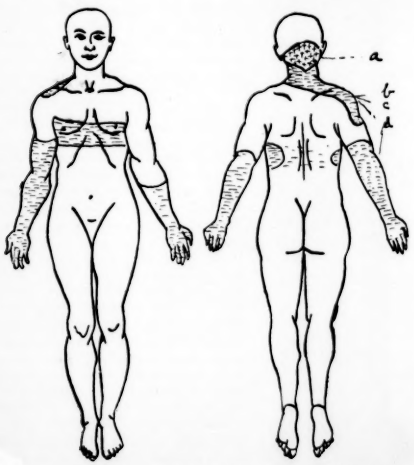

Fig. 3.—Chart of sensory disturbance areas found in Case 2. *a*, hyperalgesia; *b*, anesthesia; *c*, analgesia; *d*, thermanalgesia.

edema and vacuolation, that is, beginning cavity formation. There only can the central canal be made out; it is dilated and tortuous. The diagnosis is gliosarcoma of cord with invasion of pia and in an advanced stage of breaking down.

The diagnosis of extramedullary tumor of the spinal cord can be made early in the course of the disease, provided we obtain and interpret properly the subjective and objective symptoms. When these are correlated with our knowledge of the anatomy and physiology of the central nervous system we are able to locate the exact site of the growth, even in the incipient stage.

Tenderness over the vertebrae with various neuralgic symptoms that are persistent, usually unilateral and localized, preceded by paresthesia and followed by cramps and finally by atrophies, are, in order, the earlier symptoms of focal disease of the cord. If these can be ascribed to root irritation, from the presence of sensory disturbance, our suspicions should be at least aroused. Sherrington has demonstrated that a root does not supply a sharply defined area, but on the contrary the root areas overlap each other. Whereas in ordinary neuritis the sensory disturbances are confined closely to the course of the nerve, the disturbance caused by a root irritation is not sharply outlined, but will reach above and below the root area, gradually merging from the normal to the diseased. Furthermore, there is usually associated with the latter a band of hyperesthesia above the anesthetic zone.

Chief among other conditions that may give rise to similar symptoms is vertebral caries. The absence of tuberculosis elsewhere and a negative Roentgen-ray examination of the spine and lungs will permit of its exclusion.

Syphilis is always difficult to differentiate, particularly when the patient has a known syphilitic infection. Lues when affecting the cerebrospinal axis rarely confines itself to one locality, but is rather of a disseminated character. The symptoms are not constant but vary considerably especially with treatment. Syphilis can reasonably be excluded if the cerebrospinal fluid gives a negative Wassermann reaction, when a large quantity of the fluid is employed in the test (1 c.c.).

Reflex symptoms from a disease of a visceral organ may resemble the early symptoms of spinal-cord tumors, as aneurysm, neoplasm, etc. A careful analysis of the symptoms, combined with Head's zones and the absence of anesthesia, instead of root symptoms will exclude a cord lesion.

As the tumor grows it will compress the cord causing the appearance of tract symptoms. At first, if one-sided, these will commonly assume the type known as the Brown-Séquard syndrome, and if at this stage we can exclude syphilis, caries and multiple sclerosis localized in the cord, it is probable that a tumor is present. Here we wish to emphasize that when once a level lesion is established through a careful sensory study, though the exact pathologic diagnosis remains still in doubt, an exploratory laminectomy should be performed (caries being absolutely excluded). If the growth has been allowed to remain beyond this stage, paraplegia develops and a complete compression of the cord or a transverse myelitis results. Probably no one will then doubt the existence of a tumor, but irreparable damage has been done; spinal-cord tissue does not regenerate. Extramedullary tumors are frequently benign, and restitution may be expected provided the neoplasm is removed at the opportune time. Dr. Abrahamson has now under observation three such cases, two at the Neurological Hospital, Blackwell's Island, that were operated on by Dr. Charles Elsberg, and another at the Montefiore Home operated on by Dr. Kiliani over seven years ago at the German Hospital. The restitution in these cases has been almost complete.

Circumscribed serous meningitis also produces symptoms very similar to those of extramedullary tumors, and a differential diagnosis is frequently impossible. The root symptoms and the pains so characteristic of tumors, however, are not pronounced in some instances of circumscribed serous meningitis. An early laminectomy is required in either case, and therefore an exact pathologic differentiation is not of practical importance.

The diagnosis of intramedullary tumors is at times easy and at other times exceedingly difficult. In this condition we do not have the incipient symptoms occurring alone which are seen in the extramedullary type, but they are associated from the very beginning with cord symptoms, such as tract involvement.

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A number of conditions may be mistaken for intramedullary growths, such as syphilis, gliosis, syringomyelia, progressive muscular atrophy, multiple sclerosis and tuberculosis of the cord. There is, however, one characteristic sign that differentiates a tumor from all these enumerated conditions, namely, root symptoms, which, from the onset, accompany the cord symptoms.

Syphilis has previously been discussed. Gliosis spinalis and intramedullary tumors cause very similar symptoms and an exact differentiation between the two is in many instances impossible. It is well to remember, however, that the incongruity of sensory and motor symptoms, is characteristic of gliosis and syringomyelia. In other words, the sensory disturbances are wide-spread and do not correspond to the amount of motor disturbances. Pathologically, gliosis, syringomyelia and gliosarcoma are very closely related and one may be transformed into the other.

Again, besides the characteristic and often wide-spread sensory symptoms peculiar to syringomyelia, there are trophic changes in the skin, muscles and bones early in the disease, while in tumors such symptoms are of late appearance. Progressive muscular atrophy has no sensory disturbances. In multiple sclerosis, sensory disturbances are rarely very pronounced. The symptoms are wide-spread, rarely focal. There is intention tremor, optic atrophy and characteristic speech. Tuberculosis of the cord, as shown by Oppenheim is usually confined to the gray matter of the cord. Tuberculosis of another organ is usually found present.

The outlook for a good result following an operation is not as bright as in the extramedullary variety. It was recently shown, however, especially by Dr. Elsberg that even in this condition the removal of the tumors can be successfully accomplished by a process of extrusion, and if of a benign and circumscribed character, fair restitution can be obtained.

CONCLUSIONS

1. Comparing the two cases presented, it is evident that considering the nature and the situation of the growth in Case 1, had it been early diagnosed and removed before paraplegia set in, the result of the operation would have been brilliant. In Case 2, the tumor being infiltrating and involving the pia, an operation most likely would not have been very effective. Bearing in mind, however, that even central neoplasms may be benign or at their early stage circumscribed and not infiltrating, a surgical technic as developed by Dr. Elsberg ought frequently to give us satisfactory results.

2. An early diagnosis is of paramount importance.

3. A careful study and charting of the sensory disturbance will always establish the level.

4. Wherever a persistent level is established and is associated with some other suggestive symptoms an exploratory operation should be performed at the earliest possible moment, even if the exact pathologic process be still undetermined.

5. With present surgical skill, less damage will be done by an exploration than by allowing the cord to be injured beyond repair.

561 West One Hundred and Sixty-Third Street.
252 East Broadway.

Prevention.—The death of a single child by violent means causes a shudder to pass through a million minds, but the slaughter of a million innocents by preventable disease is complacently called the act of Providence.

THE DORSAL POSITION DURING THE PUERPERIUM AS A CAUSE OF RETROVERSIO UTERI

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During the year ending Aug. 1, 1913, there were 105 papers published on the subject of uterine displacements throughout the world.[1] Of all these papers, only one-half of one paper was devoted to the etiology of these conditions (other than obstetric injuries). These papers represent a tremendous amount of work. Practically every paper mentioned the injuries incident to delivery as causative factors, but other causes were ignored. The subject of posterior displacements without obstetric injuries to the genitalia was scarcely mentioned. The literature classifies the causes of the above-mentioned condition about as follows:

1. Congenital lack of ligamentary tone throughout the body.
2. Pelvic inflammatory trouble, followed by adhesions.
3. Extreme distention of bladder and rectum, pushing cervix forward and fundus backward.

A very few authors (gynecologists, not obstetricians) are now adding a fourth cause, "the dorsal position during the puerperium."

Both permanent and movable displacements receive their chief impetus in the days immediately following delivery. The involution of the uterus, ligaments, vagina, vulva and perineum is a physiologic act, and should therefore leave no defect or malposition behind it. The uterus after delivery is not only large and heavy, but is more freely movable than at any other time during the life of the woman. Bumm[2] says:

> The movability of the uterus and vagina during the puerperium is tremendous. It can happen that the fundus is pushed up to, and under the border of the ribs, when the bladder is greatly distended.

While delivering a woman who had previously had the round ligaments shortened by the Gilliam operation, it occurred to me that the dorsal position would be contraindicated during the puerperium. We can safely assume that this uterus was held in the anterior position by the round ligaments, and by them alone. She had had a complete retroversion previous to her operation, and the round ligaments *only* had been shortened. We can, therefore, dismiss the possibility of help from the broad or sacro-uterine ligaments. It seemed to me that these round ligaments *might* stand the strain of the dorsal position, but why make the experiment?

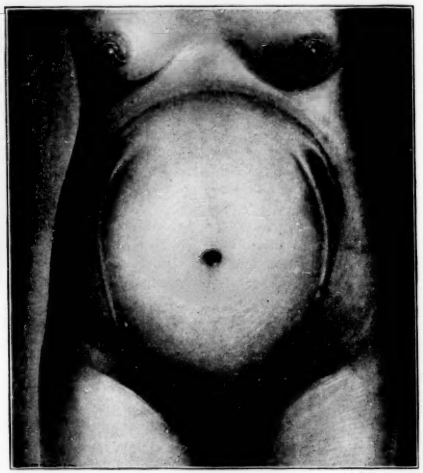
We now come to the question, Are we ever justified in putting the recently delivered woman in the dorsal position? The uterus is then larger and heavier than at any time during the life of the woman, excepting before delivery, when a posterior position is impossible. The ligaments have not undergone involution, and cannot support the uterus. The normal bladder irritability is usually lacking for several days, often causing unsuspected bladder distention. An overdistended bladder, more than anything else, will tend to push a uterus out of position. In short, it would seem that the dorsal

1. Index Medicus.
2. "Die Beweglichkeit der Gebärmutter und Scheide in den ersten Wochenbettstagen, ist eine grosse. Es kann geschehen dass man den Fundus uteri, bei starker Blasenfüllung am, und selbst unter dem rechten Rippenrande findet."

position during the puerperium is the ideal condition for the production of retroversio uteri. We have:

1. Temporarily weakened ligaments.
2. Lack of any but ligamentary support.
3. Exceedingly heavy and freely movable uterus.

Of the last seventy-four patients entered in the gynecologic clinic of the St. Louis University, eleven had uterine malposition. Only four of these eleven were uncomplicated by perineal and other injuries. One of the four was a virgin with splanchnoptosis, thus leaving three women who had borne children, and who had retroversio uteri uncomplicated. These three patients all declared that the symptoms started shortly after delivery. All three spent the ten days following delivery flat on the back, without being permitted, even for a short time, to change position. Inasmuch as the midwives of St. Louis rarely permit their patients any but the dorsal position after delivery, there is nothing surprising about the way these women were treated. Surely



Is it reasonable to expect these round ligaments to hold this uterus in anteversion, after delivery, with the woman in the dorsal position?

these patients owe their troubles to stupid insistence on the dorsal position during the puerperium.

Practically all the text-books on obstetrics used at present ignore the question of the position during the puerperium. Some of the books on gynecology mention the subject, but the dorsal position during the puerperium is not universally recognized as a cause of retroversio. Many authors, in private letters that I have had, admit the importance of the subject, and some are going to mention it in their next editions.

The illustration gives an idea of the tremendous changes that take place in the round ligaments during pregnancy. Is it reasonable to expect these round ligaments to hold this uterus in anteversion after delivery, with the woman in the dorsal position?

If we assert that a return to the four-footed manner of life would remove posterior uterine displacements, we state an interesting fact that cannot possibly be demonstrated. If we ask, however, that woman remain off her back during her puerperium, thus taking a lesson of the lower animals, we ask something that is possible of fulfilment. To spend most of her time on her right and left sides, occasionally to be flat on her abdomen, or to assume a position slightly on her side but almost on her abdomen, would seem a logical procedure for at least eight days. Bumm says that the uterus loses half its weight in the first eight days following delivery. The involution of the round ligaments is probably well advanced by that time.

I certainly think that the dorsal position should be prohibited during the puerperium, unless there seems to be an interference with the flow of the lochial discharge while the woman is in other positions.

Wall Building.

SEVERE CUTANEOUS ERUPTION FOLLOWING NEOSALVARSAN

REPORT OF TWO CASES *

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The two cases herewith reported presented unusual and severe complications following the administration of neosalvarsan. In both cases the skin alone was affected, other portions of the body apparently escaping all deleterious effects of the drug. Each patient received three doses of neosalvarsan, at intervals of about a week. The first case was in the primary stage of the disease, the second in the tertiary; in neither were any skin lesions present prior to the injections. The cutaneous eruption appeared in both after the third injection (twelve days in one case and seven in the other). The first patient had had a small amount of mercury, and it was at first thought that this was responsible for the condition; the second patient received no mercurial medication in connection with the arsenical injections.

When about a week old the eruptions on the two patients were strikingly similar, both being symmetrical and diffuse, with moderate infiltration of the skin. In both cases the surface was slightly roughened. The subsequent courses, however, were rather different. In Case 1 the reaction was much more severe, and there was greater prostration, though the course of the disease was shorter; in its terminal stages the eruption developed into a well-marked dermatitis exfoliativa. The second case retained the characteristics of an eczema throughout its course.

In forming an opinion as to the etiology of the eruption, the possibility of an analogy to the Jarisch-Herxheimer reaction is to be considered, as in some cases the energetic administration of mercury and arsenic has resulted in a severe dermatitis of syphilitic causation. The fact that Case 1 has had a continuously negative Wassermann reaction for more than ten months and is clinically free from all signs of the disease would seem to militate against this view.

* Read before the Philadelphia Genito-Urinary Society, Nov. 24, 1913.

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CASE 1.—Man, aged 22, Jewish, with a chancre of three weeks' duration (the *Spirochaeta pallida* found by dark-ground illumination), received a dose of 0.75 gm. neosalvarsan, Nov. 20, 1912. There was a trace of albumin in the urine prior to the injection. As the albuminuria did not become more marked and there was no subjective reaction, doses of 0.9 gm. were given on November 27 and December 2. In addition he was given mercury protiodid, 1 grain a day, beginning November 29. The gums quickly became tender, so that the mercury could not be increased; in fact it was taken very irregularly till December 24, when it was stopped altogether. Inunctions were given for two days.

Fig. 1.—Height of the eruption in Case 2.

December 14 the patient noticed that his body was red. When he reported two days later his trunk and upper extremities were covered with a diffuse eruption of a dark copper-color. The surface was slightly roughened; itching was intense. The eruption gradually grew more severe and more extensive, and assumed the characteristics of a severe caloric dermatitis. The skin of the chest, abdomen, upper extremities, face and neck were the regions most affected at the beginning of the attack; the back was but slightly involved. Inflammation of the skin of the genitalia and lower extremities appeared later and was of great severity. The patient was confined to the house from December 24 till February 12, during the greater part of which time he was in bed. His face became so swollen that one eye was nearly closed. There was much secretion of a serous character, which exuded from all portions of the body, necessitating changes of the bedclothing several times a day. Moderate elevation of temperature was present during the greater part of the time; 101.8 F. was the highest recorded. Prostration was extreme, and there was a marked muscular tremor. Strange to say, the character of the urine steadily improved, and when the disease was at its height no albumin was present; casts were never found. Finally a well-marked dermatitis exfoliativa developed, the greater part of the body being scarlet, with patches here and there of desquamating epithelium. At this time there was also a marked edema, especially of the upper extremities. Recovery was accompanied by universal desquamation, loss (temporary) of the greater part of the hair, and ridging of the nails.

At present the patient is apparently in perfect health. He has gained weight and shows no evidence of the dermatitis or his spirochetal infection. The Wassermann has been continuously negative, the last test having been made on Oct. 20, 1913.

CASE 2.—Annie B., aged 35, Jewish, referred by Dr. Henry Golden, was admitted to the Polyclinic Hospital June 11, 1913, complaining of excruciating migraine. She had had four miscarriages, the last thirteen years ago, and some of her four children showed stigmata of congenital lues. She gave no history of primary or secondary lesions; her husband had a chancre twenty years ago. She had been having severe headaches for the last eighteen months at intervals of three or four weeks. At times the pain was almost intolerable and prompted thoughts of suicide. The duration of the attacks was about two weeks. The results of two Wassermann reactions had been strongly positive. The urine contained a few hyaline casts on admission.

The patient was given intravenous injections of 0.9 gm. neosalvarsan on June 11, June 19 and July 3. The first injection was followed by a transient trace of albumin in the urine, and a temperature of 99 F. After the second injection she complained of vertigo, nervousness and epigastric distress. Temperature rose to 102, and pulse to 120, both becoming normal in twenty-four hours. She also had a macular rash on her arms and chest, lasting forty-eight hours. Neurologic examination showed no lesions of the nervous system other than the chief complaint.

She was readmitted to the hospital on July 22, complaining of burning and itching of the skin. She stated that one week after the third injection of neosalvarsan her face began to swell and an eruption appeared. One week later the extensor surfaces of the forearms exhibited an eruption beginning as an erythema, changing to diffuse millimeter-sized papules, and finally passing into a pustular stage. On the day of readmission the patient's skin was red and hot, and the entire body surface was covered with a diffuse maculo-papular eruption, excepting that on the extensor surfaces of

Fig. 2.—Patient after recovery.

the forearms pustules were superadded. The loose tissue of the face, neck, ears, lips, hands and legs was very edematous, imparting the sensation of an infiltration. No moisture of the skin was present. Burning and itching were intense. Temperature, pulse and respiration were essentially normal at the beginning of the attack and for a week following its advent. A second neurologic examination was negative save for a slight peripheral neuritis. Urine contained a trace of albumin, but no casts. Blood was normal; blood-pressure, systolic 128, diastolic, 78.

The condition became rapidly worse, being most marked on the face, forearms, scalp, arms, chest, legs, back and abdomen, in the order named, and had the appearance of an acute erythematous papulosquamous eczema. There was much oozing of serum and subsequent crusting of the surfaces most involved. Figure 1 represents the condition at the height of the attack. At no time was the patient greatly prostrated, but spent most of her time sitting up in bed. The temperature was markedly intermittent, and ranged from 96 to 102 F. (Fig. 3). The urine showed no abnormalities other than those already noted.

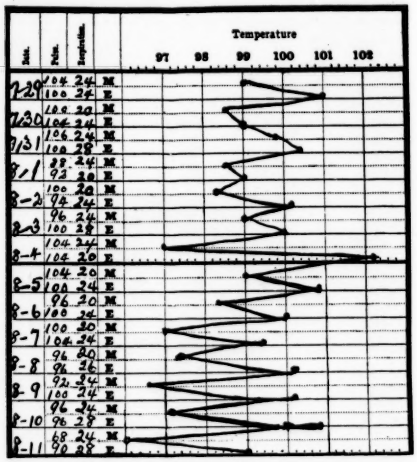

Fig. 3.—Temperature chart in Case 2.

The skin was entirely normal with the exception of a patch of eczema rubrum on one leg on November 22, when the second picture was taken (Fig. 2). There was marked thickening of the nails, however. The patient has had no headaches since receiving the neosalvarsan. The Wassermann reaction is still strongly positive.

116 South Nineteenth Street.—1523 Pine Street.

Some Hygienic Fallacies.—The new hygiene has given us an entirely different conception of many of the factors that enter into health and disease. It has exploded many a world-old fallacy. We know, for example, that there is practically no more danger from sewer-gas than the farmer subjects himself to on his manure-pile. The old bugaboo of sewer-gas dies hard. People have always clung, and still naturally cling, to the notion that anything that smells bad must be detrimental to health. Science has demonstrated that our sense of smell is a poor sanitary guide. It is certainly absurd to accuse the odors from plumbing of being the source of diphtheria, typhoid fever, scarlet fever, sore throat, or any other infection.—M. J. Rosenau in *Vermont Med. Month.*

FLUOROSCOPIC BRONCHOSCOPY

E. FLETCHER INGALS, M.D.
AND
STANTON A. FRIEDBERG, M.D.
CHICAGO

REPORT OF CASE BY DR. INGALS

About three years ago Mr. X., aged 42, drew into the air-passages a band of gold that had been fitted around the last molar tooth as a part of a crown. This measured 0.5 mm. in thickness, from 4 to 7 mm. in height at different places, and from 1 to 1.2 cm. in diameter. It was elongated to 1.4 cm. by pulling through the stricture mentioned below. At the time of the accident this was supposed to have passed down the esophagus. It lodged in the first branch of the right bronchus going to the upper lobe of the right lung. The patient had been suffering from a severe bronchitis for several years. After the accident he had four bronchiectatic abscesses in the upper lobe of the right lung, the last about four weeks before coming to me. The true nature of the trouble was not discovered until he came under the observation of Drs. E. L. Timmons and G. B. Webb of Colorado Springs, who made the diagnosis and sent him to me.

At the Presbyterian Hospital, Nov. 28, 1913, assisted by Dr. Stanton A. Friedberg, I did bronchoscopy under local anesthesia. We found a large cicatrix where we should have found the opening of the bronchus, which had been so constricted that it was impossible to penetrate the stricture with the bronchoscope, or with any rays of light; indeed, we were unable to locate surely the fistula through which the mucopus slowly escaped; but we could see a small depression that appeared to be its mouth. Careful probing did not enable us to find the opening or locate the foreign body, and after a long search we found the task hopeless. I placed the patient in a croup tent for three or four days, until the reaction caused by the operation had subsided. December 3, under local anesthesia, I repeated the bronchoscopy aided by the fluoroscope. Drs. S. A. Friedberg and J. E. Rhodes assisted me and Messrs. Earl Ball and G. W. Wallerich, for Dr. Potter, managed the Roentgen apparatus. Having passed the bronchoscope down to the scar tissue, with the aid of the fluoroscope, I directed it accurately toward the foreign body, which was found to be about 3 cm. beyond the end of the tube. A strong tube-forceps was then introduced. By firm pressure the bronchoscope was carried to within about 1.5 cm. of the shadow of the foreign body, and the forceps was then carefully pushed through the stricture, which appeared to be about 3 mm. in diameter. When the shadow indicated that the forceps had reached the foreign body, the instrument was moved laterally back and forth to assure me that it was in the same opening with the foreign body, and when I had satisfied myself on this point, I opened the blades and pushed the forceps onward about a centimeter and closed them on the gold band, which was grasped with one blade inside. Traction at once brought the shadow of the gold band into apposition with that of the end of the tube, and quickly convinced me that I had a firm grip on the foreign body. Continued traction for two or three minutes with what I estimate about 6 pounds of force gradually drew the band through the stricture until it suddenly snapped out at the proximal end, and I thought the forceps had slipped off; but renewed traction showed me that the foreign body was against the end of the tube and I then drew out the two together. The band had been considerably flattened and elongated by being pulled through the narrow stricture.

The patient had suffered practically no pain during the operation notwithstanding the strong traction that had been necessary. He was again placed in a croup tent for forty-eight hours, but there was little or no reaction, and on the fifth day after the operation he was ready to leave the hospital. A week after the operation he had gained 10 pounds.

The forceps used in this case (shown in the accompanying illustration), was a simple tube-forceps, which

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was attached to a Krause handle; and it is far and away the best instrument for removing metallic or hard bodies that I have ever seen. It is strong and of small diameter, so that it will pass through any tube that can be used in bronchoscopy. Its chief characteristic is in the grasping surface of the blades and the strength of the spring by which the blades are opened as they are protruded through the tube. The surface of these blades is cut like a file with the cutting edge toward the handle, so that the harder the pull the firmer they grasp the body.

I had this forceps made for a similar fluoroscopic bronchoscopy. In that case a child had a shingle-nail in one of the tertiary divisions of the left trunk-bronchus with the head upward. The nail was in such a small tube and its head so hidden by granulation tissue that it was impossible to see it. Aided by the fluoroscope, I was enabled to grasp the head of the nail, but the various forceps employed repeatedly slipped off and I was obliged to desist. I then had this forceps made and secured the nail at the next operation. This forceps has not slipped in any case in which I have used it.

In the case of the child, I learned an important thing for fluoroscopic bronchoscopy. When the forceps has been passed down so that its shadow reaches the shadow of the foreign body, the end of the instrument should be moved back and forth laterally to determine whether or not it is in the same bronchus or cavity as the foreign body. If it is in a different tube the shadow of the forceps will pass away from that of the foreign body, but if in the same bronchus, the shadow of the foreign body will move with that of the instrument.

When a metallic body has passed into a fine bronchus, into which the bronchoscope cannot enter; or into which the light cannot be projected; or when the foreign body is hidden by granulation or scar tissue, fluoroscopic bronchoscopy is a great aid in its removal.

In using this method it is most important for the operator to assure himself that his forceps is in the same tube or cavity as the foreign body and that he is not grasping lung-tissue. A strong, slender, never-slip forceps is essential to success.

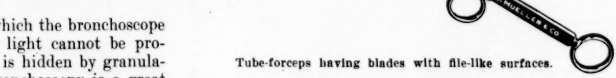
Just a week after this operation I assisted Dr. Friedberg in a similar operation, the history of which he adds to this report.

REPORT OF CASE BY DR. FRIEDBERG

A boy, aged 9, stated that two years ago last summer (August, 1911), he was lying under a tree with a brass bolt in his mouth which he aspirated. A violent coughing-spell immediately ensued. He told no one of the mishap until last June. One week after the accident he became ill with what his physicians called congestion of the lungs. This spell lasted for three weeks. He recovered from this attack but was not well or strong. He had a hacking cough until last winter when the cough became loose and he raised a great deal of a foul-smelling material. From time to time the patient had headache and high temperature. He failed to develop as a boy of his age would normally. In June, 1913, he was taken to Port Huron, Mich., to consult Dr. B. E. Brush. A diagnosis of abscess of the lung was made and posterior drainage was established. A roentgenogram which was taken before the operation showed the bolt in the lower part of the left lung and search was made for it at the time of the operation. Following the operation for drainage, the boy gained 15 pounds in weight. The wound closed at the end of about six weeks. During the fall the symptoms returned. He coughed a great deal and raised large amounts of pus. He was referred to Dr. Arthur Dean Bevan at the Presbyterian Hospital, who kindly asked me to assume charge of him. His temperature on admission was 100.4 F., pulse 120, respiration 28.

Examination showed a frail, undernourished boy. The respiratory movements of the left side of the chest were markedly diminished. There was a large scar with retraction over the lower part of the left chest from the former operation. Dulness was present all over the left side on percussion, being less marked over the upper lobe. The respiratory sounds were feeble over the upper lobe, with some moist râles present. Over the lower lobe the signs were those of a cavity with loud bubbling râles. No tubercle bacilli were found.

Bronchoscopy was done under local anesthesia. A continuous flow of very foul pus appeared as soon as the tube was introduced. It was impossible to see anything or do anything on account of this condition. After suction and swabbing had been carried on for almost half an hour the failure of the lighting apparatus compelled me to stop. Two days afterward the second trial was made by fluoroscopic bronchoscopy. The larynx was cocainized and a tube introduced. There was still a large amount of pus present, but there was less difficulty in clearing the bronchus. The tube was carried downward to the bronchus from which the pus appeared to come when the lighting apparatus, which had just come from the repair-shop, failed again. The fluoroscopic screen was then used. The forceps described by Dr. Ingals was introduced through the tube and I could feel it slip through a narrow opening into a cavity. With the screen, which was managed by Dr. Ingals, the movement of the tube and forceps was controlled, and I am greatly indebted



Tube-forceps having blades with file-like surfaces.

to him for his aid. As shown by the shadow, the bolt was at first grasped about the middle, but as it would have been impossible to extract it in this position it was loosed and finally a hold was secured at its head, when it was brought out with the tube. Much pus and some blood immediately followed. The boy, however, was in good condition and complained only of some pain and soreness in the neck following the operation.

The diameter of the head of the bolt was 8 mm., and the entire length was a little over 17 mm. The temperature went to normal the next day, December 11. On December 12 it went as high as 100.4 F. December 13 and 14 it reached 102 F. On December 15 it rose to 104.2 F. No evidence of pneumonia could be found. The boy was still coughing and raising a large amount of pus, so the expedient was adopted of raising the foot of the bed and keeping the head low for a certain number of hours at intervals each day. This seemed to assist the drainage. On December 16 the temperature dropped below 100 F., at which point it remained for the next four days when, on the insistence of the father, he was allowed to return home. The respirations were from 18 to 20, the pulse 88 on his discharge.

Inasmuch as the changes produced in the lung as a result of the long-continued presence of the bolt were so extensive, it is somewhat doubtful what the ultimate outcome will be. Naturally, the conditions for recovery are better now than before the operation. If progress is not satisfactory, I believe that it will be both advisable and necessary to reestablish the posterior drainage.

104 South Michigan Avenue.

TRAUMATIC EPILEPSY

REPORT OF A CASE OF FIVE YEARS' DURATION CURED BY SURGICAL TREATMENT

WILLIAM M. LESZYNSKY, M.D.
Neurologist to the Lebanon and Harlem Hospitals
NEW YORK

Many years of experience and observation have shown that surgical operation on the skull or brain for the cure of epilepsy has well-defined limitations. The indications for operation are: (1) epilepsy following cranial traumatism; (2) jacksonian epilepsy, and (3) grand mal attacks in which there are distinct clinical evidence of a focal lesion.

The earlier the operation is performed after the cranial traumatism the more favorable the prognosis. As a rule, when the epilepsy has continued for a number of years, the epileptic habit, as it were, has become established, and hence operation, such as the removal of depressed bone, separation of adhesions, or excision of a portion of a cortical center ofter proves futile.

In the case herewith reported the cranial injury occurred during childhood. The epilepsy developed fifteen years later, and continued for five years.

Charles L., a bookkeeper, aged 26, first consulted me May 18, 1910. At the age of 6 he fell from a height and received a compound fracture of the skull over the vault on the right side. He was removed to a hospital and prompt surgical treatment instituted. Several weeks later he was discharged without any apparent residual symptoms of the injury. He soon returned to school and in the course of years his physical and mental condition developed normally. He remained in perfect health until the age of 21 (fifteen years after the injury), when he had an attack of clonic spasm affecting the muscles of the left hand and forearm, which was almost immediately followed by loss of consciousness and a general epileptic convulsion in which he bit his tongue. These attacks have recurred about once a month during the past five years, and have not varied in character or intensity, often taking place during sleep. Two days before he visited me he had four severe attacks during one night. He has never suffered from headache, save immediately after the epileptic paroxysm. There is no history of venereal disease, alcoholism or masturbation. He does not use tobacco. The gastro-intestinal tract functionates normally, the general health is good, and the patient follows his occupation regularly unless temporarily incapacitated by an attack.

Examination shows a well-developed young man in good physical and mental condition. Over the right temporoparietal region there is an irregularly shaped deep depression, (the bone having been surgically removed at the time of the cranial injury), 1½ inches in diameter about 3½ inches above the mastoid process, and 2 inches from the median line. The pupils and eye-grounds are normal. Further physical examination reveals nothing otherwise abnormal.

It being quite evident that the epileptic attacks were due to focal irritation from a cortical lesion resulting from the original traumatism, an early operation was advised.

The patient entered the Lebanon Hospital five days later and the operation was performed May 23, 1910, by Dr. Henry Roth, one of the attending surgeons, to whom I am indebted for the following notes:

"There was a scar from a curved incision over the right temporoparietal region. Within this there was another crucial scar, which was hard, depressed, adherent and pulsating. The central area showed absence of bone, and was about 1½ inches in diameter. A semicircular incision was made surrounding the outer curved scar in the right temporoparietal region. The pericranium was raised from the skull by dissecting inward toward the scar. The edge of the bone defect was removed, exposing the normal dura. The dura was then incised and carefully dissected off the brain-tissue, to which it was firmly adherent at the cicatricial area. The raised flap consisted of scalp and dura directly over the precentral convolution including all of the scars. After all bleeding was checked, the exposed brain-tissue was covered with Cargile membrane. The flap was replaced and sutured with silk, a small rubber-tissue drain being left in the lower angle of the wound. The drain was removed on the third day, and the sutures on the seventh day following the operation. He was discharged from the hospital June 11, 1910."

The patient was under my observation and reported to me regularly during the following year. He has never had any form of epileptic attack since the date of operation, a period of three years and seven months having elapsed. His general health has been good and he has attended daily his occupation as a bookkeeper. The treatment subsequent to the operation has been simply hygienic. He has never received any form of bromid or other sedative drugs.

145 West Seventy-Seventh Street.

ANASTOMOSIS OF THE FACIAL AND HYPOGLOSSAL NERVES FOR FACIAL PARALYSIS *

CULLEN F. WELTY, M.D., SAN FRANCISCO
Surgeon Chief of Otology, San Francisco Polyclinic; Otologic, Rhinologic and Laryngologic Surgeon, St. Mary's Hospital, and City and County Hospital; Consulting Otologic, Rhinologic and Laryngologic Surgeon, German Hospital

Patient.—J. T., a man, aged 23, was shot in the right ear in September, 1909. Patient was in a local hospital for one month after he was hurt because of intense vertigo, nausea and vomiting. Facial paralysis was observed on the day following the accident.

Examination (September, 1910).—Face: complete paralysis. On the injured side the eye cannot be closed; cheek muscles are flabby, all lines obliterated, and forehead smooth (Fig. 1); mouth is drawn to the opposite side. The condition is

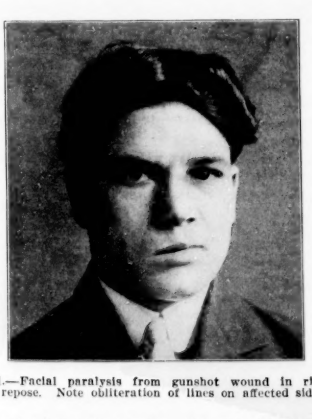


Fig. 1.—Facial paralysis from gunshot wound in right ear. Face in repose. Note obliteration of lines on affected side.

accentuated when patient smiles (Fig. 2). No response to either faradic or galvanic current. No nystagmus or vertigo. Ear: Foul discharge, the meatus considerably contracted from the gunshot wound. The scar is about a quarter of an inch within the meatus, posterior and above. Because of the contracted meatus and the destruction, the parts cannot be recognized. From the location of the scar it is reasonable to believe that the facial nerve was not cut, but pressed on by a fracture. By tuning-fork: Weber to the good ear; Rinné

* Read before the Surgical Section of the San Francisco County Medical Society, Oct. 21, 1913.

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negative, heard in the good ear; injured ear completely deaf as proved by Neumann's noise apparatus; caloric reaction negative. By Roentgen ray: Bullet located in the petrous portion of the temporal bone.

With a bullet located within the petrous portion of the temporal bone, no hearing on the injured side, caloric reaction negative, the proof is almost positive that the facial nerve is so destroyed that it can never regain function.

Operations.—The ordinary radical mastoid operation was performed to remove the bullet and the chronic suppurative

Fig. 2.—Patient shown in Figure 1, smiling. Condition best seen by alternately covering half of face.

process; the entire posterior wall was found to be destroyed by the gunshot; tegmen tympani and antri intact; no other fracture apparent macroscopically; bullet imbedded to its depth in the region of the promontory of the petrous portion of the temporal bone. No trace of the facial nerve was found at operation, which was completed by the Neumann plastic; wound closed posteriorly; cavity entirely dermatized in six weeks. One month after complete epidermization the anastomosis with the spinal accessory was attempted. The spinal accessory was anomalous in this patient and the hypoglossal nerve was substituted. The facial nerve was severed at its exit from the stylomastoid foramen, the hypoglossal nerve was severed low down and an end-to-end anastomosis was made. Very fine thread was passed through the sheath of the severed ends of the nerves; the suture was repeated on the opposite side. An additional suture of catgut was inserted through the center of the nerves in their longitudinal axis. The sutured nerves were surrounded by Cargile membrane, which did not remain in position and was removed. The nerves were replaced under the stylohyoid muscle, which had been severed for better access to the nerve. The muscle was sutured and the wound closed in the usual way. Healing took place in a very short time.

Postoperative History.—About one month after the anastomosis, galvanic electricity was applied on alternate days for a period of two months. Faradic electricity was used on alternate days for a further period of two months. At no time did I notice any contraction of the muscles of the side of the face operated on. For the following four months, galvanic and faradic electricity were used alternately. During the latter part of the treatment I thought I noticed some fibrillar contractions about the mouth from the faradic current. This was nine months from the time the anastomosis was made. Regular office treatment was discontinued; patient was directed to purchase a battery, use it on alternate days and report to me once a month.

I did not see the patient again for about two years. A few months ago, he returned to me with the following history: At the end of one year following the anastomosis operation, he began to notice that he could move his face and during the next year he had electricity applied every other day. Since then the galvanic current has been applied at longer intervals.

At present, three years after the anastomosis, the injured side of the face moves when the patient talks; the muscles have recovered their tonicity. He can close his eye, wrinkle his face, lift the eyebrow. A smooth spot remains on the forehead on the injured side. The cerebral center of the anastomosed hypoglossal nerve has anatomically changed and now controls the muscles of his face.

Dr. Walter F. Schaller furnished me the accompanying tests under date of Nov. 21, 1913.

ELECTRICAL TEST IN CASE OF FACIAL PARALYSIS THREE YEARS AFTER ANASTOMOSIS OF HYPOGLOSSAL AND FACIAL NERVES*

Nerve or Muscle	Far	Right Galvanic m.a.	Far	Left Galvanic m.a.
N. Facialis (root)	250	4	200	2
Facialis upper branch..	225	3	150	2
Facialis lower branch..	200	4	140	2
M. Frontalis	225	4	125	3
Orbicularis palpebrarum	140	4	75	2
Orbicularis oris	175	6	75	4
Levator menti.....	175	6	75	2

* Reaction throughout, Kcc > Acc quick. No reaction of degeneration; nerves and muscles of affected side show hypoexcitability to both forms of current. Electrodes: Indifferent cm.², 16; examining, cm.², 0.75. Gaiffe faradic coil, bobine medium. Power from three dry batteries.

Figure 3 shows the atrophy that follows the cutting of the hypoglossal nerve. A slight impediment of speech exists, which is of little moment to this patient, but for one in a different social position it would amount to a real handicap. Just recently I saw a friend who has had Bell's paralysis for twenty-five years or more. At present this man occupies a very important position in which a considerable amount of

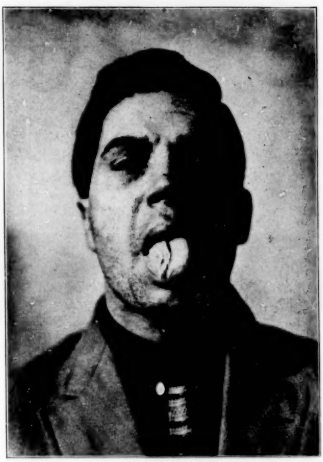

Fig. 3.—Patient shown in Figure 1 three years after anastomosis operation. Atrophy of tongue as result of severing hypoglossal nerve.

talking is necessary. Had the hypoglossal nerve been severed it would have caused a real handicap to this patient in the matter of speech. Had the spinal accessory been used with success, however, I am confident it would have prevented the drooping and turning outward of the lower lid. The tonicity of the muscles would have been such that in repose, at least, the facial paralysis would not have been obvious.

For this reason alone, I believe the spinal accessory should be the nerve of selection rather than the hypoglossal.

Shreve Building.

COMMINUTED GUNSHOT FRACTURE OF THE FEMUR, WITH FIXATION BY BONE-PLATE AND WIRES

F. B. LUND, M.D., BOSTON

On June 22, 1913, the patient was shot in the right thigh by a 0.32-caliber revolver in the hands of a policeman, the bullet shattering the femur. He had been put to bed with extension, but the position was poor; the leg was considerably bowed outward. He was very uncomfortable, with a 2-inch shortening, and had a high temperature. Roentgenograms taken by Dr. Ellsworth showed a fracture of the upper third of the femur (Fig. 1), with a piece about 5 inches long split out of the bone, and marked anterior projection of the upper fragment. I saw the patient in consultation with Dr. Walter Sargent of Quincy.

At the Quincy Hospital, July 2, with the assistance of Dr. N. S. Hunting and Dr. Sargent, I made an external incision

Fig. 1.—Position of the two principal fragments before operation; the detached piece is not shown.

Fig. 2.—Postoperative roentgenogram.

12 inches long, exposed the bone, and under strong extension brought the ends together with some difficulty and forced the fragment into place with Bartlett's clamp, so that the contour of the bone was very good indeed. Then an 8-screw Lane plate of the largest size was applied. I could insert only three screws in the upper fragment, but four were placed in the lower. The detached fragment, which lay at some little distance from its proper position, was bound by two silver wires passed around bone, plate and all, thus restoring the fragments practically to their normal position, in which they have since remained. A plaster-of-Paris spica was put on.

The wound healed by first intention and the bone remained in first-class position. The patient came to my office for observation, October 25. I found the leg perfectly straight, and he was able to bear his weight on it. There was a half-inch shortening but the leg was absolutely straight and in perfect position.

The case is reported because the fracture was oblique and comminuted, and because with the ordinary Buck's extension it had been impossible to force the fragments anywhere near apposition. The patient was a muscular, powerful man. I do not believe that without operative interference any sort of union could have been obtained. As will be seen from Figure 2, I used the largest size eight-screw plate. I have had smaller plates both bend and break in the treatment of transverse fractures of the femur in muscular men. I believe that in the femur, fixation is much better with the larger plate, and the more absolute the fixation, the less likelihood there is of irritation and of the plate's having to be taken out. The heaviest Sherman plates are good, but it seems to me that for the upper third, as in the case of this man, the heaviest plate made is not too heavy. The length of the plate permits racking of the ends, and warping out of the screws, so that a long plate as well as a heavy one is desirable. Instead of the two wires, if I had had them with me, I should have used the steel band of Parham and Martin, which they have designed for oblique fractures, but which might perfectly well be used in a case such as this in conjunction with a plate. The aid of Bartlett's clamp could hardly have been dispensed with in this case. The ordinary screws with their large thread I think are better than the fine-threaded Sherman screws.

In operating on smaller bones than the femur, smaller plates or even wire fixation may be used, and the effort may legitimately be made to use as small a foreign body as compatible with holding the bones.

527 Beacon Street.

Case of Swallowed Open Safety-Pin. — The following case seems to us to be sufficiently unusual and interesting to report: Evelyn S., aged 3, choked on an open, small-sized safety-pin at 6 p. m., Dec. 29, 1913. We failed either to see or to feel it under anesthesia, and referred her to Dr. Mersefelder of Canal Dover for roentgenoscopy. The rentgenogram showed a rather obscure shadow of the pin in the region of the stomach, the point unfastened and directed upward and to the right. The child went home for the night, but on account of soreness would neither eat nor drink. On the afternoon of December 30 we sent her to the Union Hospital and attempted to start forced feeding without catharsis. For the next twenty-four hours she would vomit everything she could be prevailed on to swallow, even liquids, although she was quite hungry. December 31, at 2 p. m., we passed a No. 26 catheter through the esophagus and into the stomach without encountering any unusual obstruction. Immediately afterward she ate ravenously without vomiting and without further trouble. The first bowel movement since the pin was swallowed occurred Jan. 2, 1914, at 9 a. m., and in it was passed the open pin firmly impacted in a large scybalum.—R. S. BARTON, M.D., and H. A. COLEMAN, M.D., New Philadelphia, Ohio.

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New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

The following dosage forms of an accepted proprietary article have been accepted for inclusion with New and Nonofficial Remedies:

CORPUS LUTEUM CAPSULES.—Each capsule contains desiccated corpus luteum, Armour, 0.3 Gm. (5 grains).

CORPUS LUTEUM TABLETS.—Each tablet contains desiccated corpus luteum, Armour, 0.13 Gm. (2 grains).

GRANULAR EFFERVESCENT SALICYLOS.—Pulvis Salicylatum Effervescens, Mulford.—This preparation has been accepted for inclusion with the appendix to New and Nonofficial Remedies.

A mixture said to contain in each 100 Gm. strontium salicylate 6.54 Gm. (24 grains per ounce), ammonium salicylate 6.54 Gm. (24 grains per ounce) with an effervescent base consisting of sodium bicarbonate and citric and tartaric acids.

Therapeutics

LECITHIN; EGG-YOLK

Phosphorus is such a necessary element in the perfect development and health of the cells of the body, and is so essential in the proper functioning of many parts of the body, especially nervous tissue, that any preparation said to present phosphorus in composition in assimilable form immediately causes clinical interest. Lecithin is a compound of phosphorus that is found in the organism, hence, when it was artificially prepared for administration in various diseased conditions, it became very popular, and was and is highly lauded as a treatment for all kinds of debility, anemias, nervous disturbances, mental diseases and neurasthenia.

In the first place, phosphorus is a constituent of nucleoproteins, and some kinds of phosphorized fats or lipoids, of which lecithin is an example. Phosphoproteins are contained in milk as caseinogen and in the yolk of egg as vitellin.

The discussion ever persists as to which elemental form is of greater value for the nutrition of the body, an inorganic salt or an organic combination. This is particularly true of iron and of phosphorus. It has been demonstrated almost beyond controversy that an ordinary person can metabolize an inorganic iron as readily and as perfectly as an organic iron, and this seems to be more or less true of phosphorus, administered in the form of phosphates or other salts. Also, it has been shown many times that organic phosphorus, as presented in milk or in eggs, probably changes in the body to phosphates, and from these salts it is elaborated into products as lecithin, so that there seems to be no physiologic or biologic reason for preferring isolated lecithin as a medicament to such a phosphorus-bearing food as the yolk of egg.

Phosphorus seems to stimulate metabolism, and often the person who receives phosphorus in any form seems not only to have an increased glandular and nervous activity, but also an increase in general nutrition. Phosphorus as an element, or such an active preparation as zinc phosphid, should rarely be administered as a medicament, as either irritates the gastro-intestinal canal, overexcites the glandular system, especially the liver, and causes more or less irritation of the kidneys. When the question is one of nutrition and the stimulation of the metabolism of the body as a whole, and not of a treatment to ameliorate a troublesome symptom, or of an antidote to any diseased condition, it seems inexcusable to administer drugs that may do harm.

The lipoid lecithins are phosphatids, and are substances of waxy consistence, soluble in alcohol, but insoluble in water. They are generally prepared from the yolk of eggs, probably are never quite pure, and contain about 4 per cent. of phosphorus. When lecithin is broken up it results in glycerophosphoric acid, a fatty acid, and cholin, which is a more or less poisonous nitrogenous base.

Under the influence of lecithin the number of red corpuscles and the hemoglobin content in anemic conditions may be increased. That lecithin is a "brain food," or is a stimulant to cerebral activity has never been proved. All statements to that effect are fallacious; in fact, there is no specific food for any part of the body. Certain nerve disturbances and certain cerebral and mental disturbances may at times increase the phosphorus output in the urine, and cause nucleoprotein, and, perhaps, lecithin disintegration; but the mere administration of lecithin, as such, could hardly be expected to improve such a condition.

The logical measure, when a physiologic nutritional phosphorus is desired, is the administration of egg-yolk. The yolk of the hen's egg is stated by Friedenwald and Ruhräh[1] to represent 49.5 per cent. water, 15.7 per cent. protein and 33.3 per cent. fat. The yolk of the egg is therefore rich in fat and protein, and has caloric as well as nitrogenous value. To obtain the activity of the lecithin content in the yolk of the egg it is perhaps best to administer the yolk raw. It certainly seems to be a fact that the administration of one or two raw or even cooked yolks of eggs per day would give a patient all the lecithin that he could metabolize, and present it in a better manner than in an artificial preparation. In any condition of debility, anemia or nervous disturbance the yolk of egg is as valuable as any or all artificial lecithins, or any preparation that combines nucleins and nucleoproteins.

It may be here stated, parenthetically, that the value of raw egg-white, or egg-albumin, as a nutrient has been very much overlauded, and dependence on egg-albumin as a food in serious conditions is a mistake. Egg-white has been found in some cases to pass very rapidly through the stomach without digestion, and to be incompletely digested in the intestine. Thus it may cause diarrhea, as well as fail to give nutrition.

1. Friedenwald and Ruhräh: Diet in Health and Disease, 1913, p. 106.

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DEATH BY FREEZING

It is scarcely necessary to explain to those engaged in the practice of medicine wherein the importance of ascertaining the precise cause of every death lies. Even if it were of no serious value to medical science (though in fact the contrary is unquestionably true), the legal aspects alone of the incidence of death present a strong plea for accurate, detailed and decisive knowledge regarding the demise of every member of the community. In the United States deaths from freezing form at most a very small proportion of the losses of life which require classification. As a rule circumstantial evidence must assist to make the determination of this mode of death comparatively easy, though alcohol and the rigor of climate are doubtless interwoven in many a case so as to render it difficult if not impossible to place the burden of immediate cause on the real factor. Death from freezing acquires a distinctly greater prominence, however, in countries like Russia, where the number of cases is reported to reach from 500 to 700 annually, and where in a single city like Riga the cause of death is attributed to cold at 9 per cent. of the medicolegal necropsies.

Reliable signs of death from undue cold are desired not only in those cases in which alcoholism may be a complicating and primary factor, but also in the case of a not inconsiderable number of new-born infants who are peculiarly susceptible to the fatal effects of the low temperatures prevailing in certain countries. Here the necropsy findings give little in the way of directive evidence. Most authorities in medicolegal matters have passed over the subject as one either devoid of serious interest or else unable to furnish a helpful solution.

The cause of death from extreme cold has been associated with a variety of pathologic consequences which doubtless cooperate in many instances. We may refer to the accumulation of carbon dioxid; the paralysis of the vagus nerve or of the vasomotor center; the undue loss of heat from the body; the engorgement of the heart with blood; an anemia of the brain; destruction of the red blood-cells, etc. None of these conditions leaves a record which can be deciphered as characteristic, if indeed it can be detected at all, at necropsy.

Dr. Krjukoff[1] of the Institute for Legal Medicine at the University of Moscow has reached the conclusion that the examination of the liver for carbohydrates will furnish a clue for discriminating between death from cold and death from other causes leading to a sudden end. Among the latter are included such circumstances as injury, asphyxiation, hanging, drowning, poisons, cardiac failure and other conditions in which life is precipitately terminated. Here there is little if any opportunity for nutritive changes, such as the transformation of the glycogen in the liver, to intervene. Cold, on the other hand, is a vigorous promoter of metabolic changes, particularly such as will liberate energy in the form of heat to conserve the threatened body temperature. Krjukoff argued that it is more than likely that the readily available carbohydrate of the liver would speedily and early be drawn on in the physiologic struggle to avert the impending catastrophe. This is at any rate in accord with evidence respecting the effect of lowered temperature on animals. In ten cases of death by cold (in man) glycogen was entirely lacking in the liver. In cases in which intoxication with alcohol was a factor, liver glycogen was still found present. The point of view here represented is based on reasonable physiologic considerations. More evidence is now needed to give some standing to this alleged characteristic sign of death by freezing.

TARTRATES AND NEPHRITIS

Our attention has lately been called to the advertisement of a well-known brand of "absolutely pure, cream-of-tartar baking-powder," in which the following passage occurs: "Cream of tartar is the crystallized acid of grapes refined to absolute purity and ground to a creamy flour. It is declared by physicians the most wholesome of all fruit acids." Without entering into a discussion of the partial incongruity of the definition which represents cream of tartar as a crystallized acid, we may still take issue with the remaining assertion respecting a product so widely used as are baking-powders of this class. It is, indeed, a matter of surprise to find how little is known and recorded in the literature with regard to the fate and physiologic action of some of the typical "fruit acids," among which are citric, malic, tartaric and benzoic acids, and their salts. The volumes to which the long-controverted question of desirable versus undesirable baking-powders has given rise have, strangely enough, not taken into cognizance some of the effects of tartrates which recent investigations have brought to light.

Many of the organic acids, like citric and acetic acids, are burned up in the body, giving rise to carbon dioxid and water. When their alkali salts are ingested, therefore, the end-product of their metabolism is alkali car-

1. Krjukoff, A.: Beitrag zur Frage der Kennzeichen des Todes durch Erfrieren, Vrtljschr. f. gerichtl. Med., 1914, xlvii, 79.

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bonate. It is widely recognized that sodium citrate, for example, functions precisely like sodium carbonate in the organism. Other organic acids, notably benzoic acid, traverse the body unchanged; in the case here selected the substance introduced reappears, combined with glycocoll, in the form of hippuric acid. Physicians have not realized that tartaric acid and its salts are for the most part not destroyed in the body and leave it in their original form. Within the past few months several researches have brought into prominence the fact that tartaric acid and its salts under suitable conditions may give rise to symptoms of nephritis of varying severity.[1]

The investigators are agreed on the main features of the action of large doses of tartrates so far as they are observed to cause a pronounced disintegrative action on the epithelium of the kidney in animals. Associated with this there is noted to be a greatly diminished volume of urine and a marked decrease in the elimination of certain of the urinary constituents. The severe renal disturbance may be attended by the excretion of protein and casts when there is not complete anuria. Such sequences are described for various forms of administration of the tartrates, by mouth, intraperitoneally or subcutaneously. According to Underhill and his colleagues, the changes induced in the kidney are confined almost exclusively to the tubular epithelium, and they even believe incidentally that this fact will afford a means of studying various phases of defective renal secretion with practically intact glomerular structure. The Philadelphia investigators, Pearce and Ringer, agree in describing the striking histologic change in the kidney as a defect of the convoluted tubules, with fatty changes in the loops of Henle and sometimes also in the collecting tubules. On the other hand, they report exudative glomerular lesions in about half of the subjects with severe tubular lesions. In the disintegrative changes taking place, vacuolation first occurs, is rapidly followed by necrosis and finally the dead cells or their débris may entirely fill the lumina of the tubules and form granular and hyaline casts. Neither the liver nor the adrenals exhibit any pathologic defect attributable to the tartrates in such cases.

The mode of administration to animals does not influence the character of the renal lesion, except that diarrhea, following administration by mouth, may cause rapid removal of the harmful salt from the intestine, and thus prevent the severer types of lesion by reducing the extent of absorption. No strict relation between the dose of tartrate and the extent of damage inflicted has yet been made out. A varying resistance or degree of tolerance seems to hinge on the character of the diet, when tartrate is given by mouth. In well-fed animals the pathologic changes induced by feeding the salts of tartaric acid, though distinct, are less in degree than those which are provoked by the same dose in starvation. There is even evidence that the actual state of nutrition plays some part in the development of tartrate nephritis.

Underhill, Wells and Goldschmidt[1] have noted that histologically there is evidence that the administration of alkali exerts a slight modifying action, presumably permitting a readier elimination of urinary waste-products. It is deserving of emphasis that the observations on tartrate nephritis are not in harmony with the widely discussed hypothesis of Fischer.[2] He has mentioned tartrates, among other salts, as being of value in the prevention of nephritis — a dangerous statement in view of the foregoing evidence to the contrary. Probably, as Underhill and his colleagues suggest, Fischer, like many others who generalize in physiology, assumed that tartrates are readily burned to carbonates in a manner similar to certain other salts of organic acids discussed above.

It would be unwise to magnify the dangers of tartrate in the face of their long use in baking-powders, in the well-known purgative mixtures like Seidlitz powders and Rochelle salt, and their actual occurrence in foods. But when we are reminded that in certain instances of chronic kidney involvement cream-of-tartar water is often prescribed for the promotion of diuresis, and that the use of tartrate purgatives is tending to be overdone in many quarters, it is time to inquire into the possibility of unsuspected dangers. If the benzoates are condemned, shall the tartrates be condoned? Some help toward an answer to this question, so far as it involves the practical use of tartrates in clinical medicine, is given in the article by Post,[3] published elsewhere in this issue of THE JOURNAL. He has demonstrated that when potassium and sodium tartrate is given in ordinary doses by mouth to human subjects it need not cause albuminuria or cylindruria; nor is there any evidence to show that tartrates aggravate an existing nephritis in his clinical experiments. Post points out that the harmful doses used by the experimenters on animals would be equivalent to nearly 7 ounces in a man weighing 150 pounds. This is, of course, incomparably greater than the clinical dosage, which ranges from 1 to 6 drams. The fact that the administration of tartrates, even in nephritis, is not necessarily inconsistent with safe clinical practice, is thus reconciled with the pronouncedly harmful effects noted in the laboratory experiments. The dosage is apparently the decisive factor.

1. Underhill, F. P.: The Influence of Tartrates on Phlorhizin Diabetes, Proc. Soc. Exper. Biol. and Med., 1912, ix, 123; The Influence of Sodium Tartrate on the Elimination of Certain Urinary Constituents during Phlorhizin Diabetes, Jour. Biol. Chem., 1912, xii, 115. Underhill, F. P.; Wells, H. G., and Goldschmidt, S.: Tartrate Nephritis, with Especial Reference to Some of the Conditions under which it May be Produced, Jour. Exper. Med., 1913, xviii, 322. Salant, W., and Smith, C. S.: The Toxicity of Sodium Tartrate with Special Reference to Diet and Tolerance, Proc. Soc. Exper. Biol. and Med., 1913, x, 170. Pearce, R. M., and Ringer, A. I.: A Study of Experimental Nephritis Caused by the Salts of Tartaric Acid, Jour. Med. Research, 1913, xxix, 57.

2. Fischer, M. H.: Nephritis, New York, 1912.

3. Post, W. E.: The Effect of Tartrates on the Human Kidney, p. 592, this issue.

THE MODIFICATION OF SECONDARY SEXUAL CHARACTERS

The belief that the so-called secondary sexual characters are in large measure dependent for their appearance on an influence exerted by the genital glands on the other parts of the reproductive apparatus and on the body generally is not a new one. Castration carried out before the time of puberty prevents the development of these secondary sexual characters, which occurs at this epoch in both sexes. Castration after puberty, though not causing any pronounced changes in the skeleton which has already assumed a permanent form, brings about retrogressive manifestations in the remaining genital organs analogous to those occurring in the female at the climacteric. There was a time, not long since, when these interrelations were supposed to be controlled by nervous connections between the genital glands and the rest of the body. To-day there is a rapidly growing conviction that the secondary sexual characters must be ascribed to the influence of chemical substances—genital hormones—produced in the ovaries and testes, respectively, and distributed by the bloodstream. We are here dealing with another of the many evidences of "internal secretions" of specific glands.

Far more convincing and characteristic than mere extirpation experiments, such as castration exemplifies, are the results of the transplantation of genital organs. Some time ago we reviewed the striking results of Steinach[1] in this field of study. They showed the peculiar effects which transplantation of ovaries and testes into young castrated animals of opposite sex could actually bring about. The potential males became converted after this exchange of genital glands into individuals of unmistakable femininity which manifested itself in the modification of form and in the deportment of the animals. The inherent impulse in the direction of a distinctive secondary sexual development, in which physical features and habits of behavior are preeminently characteristic and specific for each sex, can be completely checked and reversed, so to speak, under the influence of the type of genital glands which is permitted or compelled to survive in a youthful organism. Even the psychosexual traits are modified in accord with the sort of gland that the individual is experimentally made to harbor.

Now, however, Steinach[2] has gone still farther in demonstrating the profound influence of the genital glands. He has carried the observations far beyond the stage of puberty. The preponderance, if not the consensus, of opinion at the present moment ascribes the hyperplasia of the mammary gland and the inception of milk secretion attending pregnancy to hormones which have their start in the developing fetus or in the placenta. Steinach has noted that if the transplanted ovaries find a firm foothold and succeed in maintaining their nutritive equilibrium in his "feminized" males the development of the female sexual characters is even accentuated. The growth alterations ordinarily expressive of masculine features are inhibited so markedly that the female type becomes more conspicuous than ever. The rudimentary mammary organs, always present in the male as in the virgin female, may develop to a stage characteristic of the pregnant female. We learn the remarkable fact that the surprising hyperplasia of the mammary glands and their appendages may readily reach a stage at which typical milk, not mere exudate, is secreted in abundance. Steinach reports cases among his experimentally "feminized" males in which they not only have adopted the traits of maternal females, including a tolerant attitude toward young animals of the same species placed with them, but also have suckled the young animals.

These startling observations suggest that the significant influence of the ovary in determining and modifying character in the direction of developing the feminine type is not finished with the changes that are completed at puberty, but extends far beyond into the periods when lactation is involved. But Steinach and the roentgenologist Holzknecht have gone even farther. They have attempted to stimulate the ovary of the normal virgin female so as to cause it to induce some of these changes just described as evoked by the overactive transplanted ovaries. By suitable exposure of the region of the ovaries to the Roentgen ray, the juvenile, virgin characters were made to disappear in the non-gravid female, and to be superseded by the phenomena of lactation — enlargement of teats, hyperplasia of the mammae, secretion of normal milk and hypertrophy of the uterus.

By a comparable procedure of testicular transplantation it appears to be possible to induce the exhibition of masculine traits and features in the castrated female. Sex characters are therefore not fundamentally determined in advance throughout all the parts of the organism that ordinarily give exhibition of distinctive features; otherwise it would be impossible to remodel the sex-determined disposition of an individual so profoundly by an exchange of genital glands.

The sum total of the foregoing observations tends to confirm the view, expressed by several authors,[3] that the essential factors for the production of the genital hormones are the "interstitial" cells found in both the testes and ovaries of various animals. The genital glands are thus believed to contain gland-cells of two distinct and functionally independent types. These interstitial cells, however, are apparently not universally present. It has been shown that, by means of the Roentgen rays, it is possible to destroy the germ-cells in either testes or ovaries, so rendering the animals sterile. Whether the

1. What Determines the Development of the Secondary Sexual Characters? editorial, THE JOURNAL A. M. A., Feb. 17, 1912, p. 484. Steinach, E.: Geschlechtstrieb und echt sekundäre Geschlechtsmerkmale als Folge der innersekretorischen Funktion der Keimdrüsen, Zentralbl. f. Physiol., 1910, xxiv, 528; also, Arch. f. d. ges. Physiol., 1912, cxliv, 71.

2. Steinach, E.: Feminierung von Männchen und Maskulierung von Weibchen, Zentralbl. f. Physiol., 1913, xxvii, 717.

3. Starling, E. H.: Human Physiology, 1912, p. 1362.

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interstitial cells, which are not destroyed by these rays, are the originators of the unique effects in respect to secondary sexual development and the awakening of mammary activities remains to be determined. It is at length becoming probable, from the experimental researches of the past few years, that we shall presently see remarkable developments in the direction of influencing some of the functions hitherto regarded as beyond the pale of physiologic or therapeutic modification.

CARDIAC AND RENAL DYSPNEA

The question of the controlling factors in the regulation of respiration has furnished one of the long-debated topics of physiology. Excess of carbon dioxid and deficiency of oxygen in the circulation have each been credited with being the effective agent in promoting increased respiration. The trend of recent investigation has tended to show that each of these may represent a factor of moment, inasmuch as the respiratory center can be excited by either condition; but it has now been established, in particular by the studies of Haldane and his pupils in England, that the sensitivity of the center to carbon dioxid is by far the more important feature of the increased respiratory movements in asphyxia. Indeed, it is the only chemical factor which can at present be regarded as playing any important part in the regulation of the respiratory movements under normal conditions.

The acquisition of a fundamental chemical basis for the understanding of the processes by which respiratory activities are controlled has made it far easier to investigate the pathology of respiration intelligently. In the clinic one encounters various types of dyspnea which cannot be relieved properly until there is some adequate appreciation of the underlying disturbance. Forms of breathlessness are common to certain cardiac and renal patients, and lately a clear-cut distinction has been pointed out between the degree of breathlessness and the degree of cyanosis in certain groups of cases. It is well known that there are many persons who suffer at times from an underaeration of the blood. In these persons a blue tint is a conspicuous manifestation. This may occur in forms of congenital disease of the heart in which the venous blood is in part short-circuited by the lungs and returned to the arterial system in an unaerated condition. The dyspnea of the patients who show deep cyanosis is not always great; in fact, the deficient aeration has sometimes to be considerable before urgent dyspnea is exhibited. On the other hand, we are told by investigators who have given careful consideration to these problems that although a proportion of those heart patients who suffer from labored breathing show what may be termed deep cyanosis, yet a large, if not equal number, though breathless, are far less blue.[1] They remark that in extreme instances the breathlessness of a patient may be urgent, yet cyanosis may be slight or even absent. Obviously, a person who suffers from deficient blood aeration, that is, oxygen deficiency, must inevitably be blue; but when there is no cyanosis to suggest a cause for the breathlessness, some occasion for the dyspnea other than the purely physical relations of blood and air in the pulmonary alveoli must be found, for in such cases there is no evident deficiency in aeration. In these instances an additional cause for the more vigorous movements of respiration has been found by the English investigators in the relative acidity of the blood.

A new aspect is thus given to breathlessness, and especially cardiac dyspnea. When cyanosis, the index of deficient aeration, is sufficiently pronounced, this will of itself account for the labored breathing; otherwise acidosis must be called in to account for this symptom. The explanation naturally suggests itself that if the dyspnea of this type is not due to a lack of oxygen it may be accounted for by the second factor already discussed, namely, an accumulation of carbon dioxid caused by stasis. Blood analyses in the selected cases, however, show that it is not the result of excess of carbon dioxid in the blood.

How are we to account for an abnormal excess of acids other than carbonic acid over the bases of the blood — in other words, for the acidosis here presented and sufficient to act as a stimulus to the respiratory center which is so sensitive to acid conditions of any sort whatever? Investigation has shown that, in the cardiac cases at least, the condition of acid intoxication is not due to beta-oxybutyric acid, the compound which arises in such abundance in severer forms of diabetes. There is little evidence, furthermore, that lactic acid, another product of incomplete oxidation, is a prominent cause of the difficulty. The acidosis, as the English investigators believe, appears to be another instance of the phenomenon of retention of acids in excess of bases, perhaps because of a failure of the kidneys in respect to the excretion of acid. If this explanation should be found sufficient, the condition would admit of simple treatment by giving a diet rich in bases or base-yielding foods.

In the past there has been considerable confusion in the use of the expressions "cardiac asthma" and "renal asthma" or "uremic dyspnea." In the latter class the predominating lesions are renal, whereas in cardiac asthma the heart seems to be the seat of the difficulty. Lewis and his colleagues[1] regard it as probable, though it cannot be held as finally proved, that there is no essential difference between "cardiac" and "renal" asthma, so-called, and that the dyspnea of the cardiac cases, when neither anemia nor cyanosis is conspicuous, arises in the majority of cases from acid intoxication and is in reality due ultimately to renal defects. This does not exclude other instances of pure cardiac cases in which

1. Lewis, T.; Ryffel, J. H.; Wolf, C. G. L.; Cotton, T., and Barcroft, J.: Observations Relating to Dyspnea in Cardiac and Renal Patients, Heart, 1913, v, 45.

excessive accumulation of carbon dioxid in the blood sufficiently accounts for its reaction and the respiratory stimulus.

REFLECTIONS REGARDING CHOLESTEROL

Inasmuch as the newer researches concerning the intake and output of cholesterol in the body give little evidence of any new formation of this important compound in the organism of the higher animals, information regarding the ways in which the supply of this lipoid is altered must be heartily welcomed. Cholesterol has long attracted attention because it occurs pathologically not only in the familiar form of gall-stones, but also in tissues the cells of which are undergoing slow destruction and in which absorption appears to be poor. It is also frequently found in atheromatous patches in the blood-vessels, encapsulated caseous areas, old infarcts and hematomas, inspissated pus collections, dermoid cysts, hydrocele fluids, etc.; and in the cholesteatomatous tumors of the ear and cranial cavity. But such occurrences of cholesterol are, perhaps, of secondary moment in comparison with the rôle which it plays in the behavior of the blood-corpuscles and the numerous phenomena connected with so-called immunity reactions, all of which are a decidedly modern aspect of biochemical study. The specific blood-tests may be cited as illustrative of the various processes in which cholesterol and other lipoids have been demonstrated to be seriously involved. No earnest discussion of serologic work can be undertaken to-day without reference to them.

With the biologic importance of cholesterol thus plainly emphasized it seems incumbent to follow its history in the organism and to learn its physiologic and pathologic migrations and fate as thoroughly as may be possible by present-day methods. It seems more than probable to-day that the cholesterol of the blood is normally so distributed that the cellular elements contain the compound in its free state. The leukocytes are far richer in cholesterol than are the red corpuscles. In the blood-serum, on the other hand, cholesterol is found both free and in the form of its fatty acid esters. Broadly speaking, the cholesterol content of the blood of normal individuals appears to be constant under fixed conditions of diet and living. It can be enhanced by feeding cholesterol as such, whereby both the free cholesterol and its esters are increased in quantity in the circulating medium. Subcutaneous administration of cholesterol likewise brings about its augmentation in the blood-serum. The corpuscles are affected slightly, if at all, by such enrichment of the medium in which they float. Wacker and Hueck[1] have made the added discovery that long-continued administration of liberal amounts of cholesterol may lead to an increase not only of its derivatives, but also of other lipoid substances. It may be deposited in various organs, such as the liver, kidney, spleen, bone-marrow, gall-bladder, adipose tissue, etc. A point may be reached at which cholesterol depositions occur in the mucosa of the gastro-intestinal tract; they may even occasion a diseased condition of the aorta which in many ways resembles the features of arteriosclerosis in man.

The knowledge of the possibility of modifying the cholesterol content of the tissues of the body by the regulation of its supply opens unsuspected possibilities in directions which can be only inadequately foretold at present. We need but refer to the reputed relation of cholesterol to growth, particularly so far as it involves the development of neoplasms. Robertson and Burnett[2] have asserted that cholesterol accelerates the growth of carcinoma in rats and may be a factor in the incidence of cancer. According to Burnett, it has an accelerating action on malignant tumor growth, whether it be injected into the tumor or carried to it by the circulation. If it prove true, as now is maintained by various investigators,[1, 3] that cholesterol is not synthesized by animals, the cholesterol in their tissues being derived from the diet, the possibility is suggested of diminishing the incidence of carcinoma in inoculated animals by feeding them for a considerable period prior to the inoculation on a diet poor in cholesterol. Experiments have failed as yet to substantiate this hypothesis. Robertson and Burnett, however, have called attention to the fact that animals tend to conserve and accumulate cholesterol, and Wacker has noted an excessive content of the substance in the reserve fats of aged persons. It has been surmised, accordingly, that this in turn bears a relation to the well-known increase in the incidence of carcinoma with advancing age.

For the moment it matters little whether the facts keep pace with the hypotheses in the restricted domain of application which cholesterol biochemistry has thus far found in connection with cancer research. Our aim here is primarily to point out that when more knowledge is accumulated respecting the source and fate of cholesterol in the organism it is certain to have important biologic applications. Already it is becoming apparent that the cholesterol supply of the body can be demonstrably affected by dietary or therapeutic measures, and that cholesterol is no fortuitous component of the organism.

1. Wacker, L., and Hueck, W.: Ueber den Cholesteringehalt des Blutes verschiedener Tiere und den Einfluss künstlicher Cholesterinzufuhr, besonders mit der Nahrung, Arch. f. exper. Path. u. Pharmakol., 1913, lxxiv, 416. See also the more recent evidence of Lehmann, E. P.: On the Rate of Absorption of Cholesterol from the Digestive Tract of Rabbits, Jour. Biol. Chem., 1914, xvi, 495.

2. Robertson, T. B., and Burnett, T. C.: Preliminary Report on the Influence of Lecithin and Cholesterin Upon the Growth of Tumors, Proc. Soc. Exper. Biol. and Med., 1912, x, 59; Preliminary Communication on the Part Played by Cholesterol in Determining the Incidence of Carcinoma, ibid., 1913, x, 140; Jour. Exper. Med., 1913, xvii, 344. Burnett, T. C.: Further Note on the Influence of Cholesterol on the Growth of Tumors, Proc. Soc. Exper. Biol. and Med., 1913, xi, 42.

3. Dorée, C., and Gardner, J. A.: Proc. Roy. Soc., London, 1908, lxxx, B, 227; 1909, lxxxi, B, 109. Ellis, G. W., and Gardner, J. A.: ibid., 1909, lxxxi, B, 129. Gardner and Lander: The Cholesterol Content of Growing Chickens under Different Diets, ibid., 1914, lxxxvii, B, 229.

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Current Comment

EDUCATIONAL LECTURES ON MUNICIPAL HYGIENE

Most of the leading educational agencies of the present day recognize the value of the personally delivered message as a means of educating and influencing public opinion. The editorial, the pamphlet, the cartoon and the exhibit have a definite worth, but none of them seems to compare in effectiveness with the spoken message of an authoritative speaker. Some form of speakers' bureau is a recognized part of all successful educational campaigns. The department of social development of the Brooklyn Bureau of Charities has organized a speakers' bureau to supply lecturers on municipal problems. A directory of the men available shows a large number of well-known and recognized authorities on such subjects as women's wages, industrial accidents, old-age insurance, child labor, housing, disease prevention, foods and drugs, preventive medicine, outdoor recreation, causes of crime and vice, liquor problems, care of the insane and feeble-minded, city beautification, immigration, etc. These subjects are to be discussed from the special point of view of the New York citizen rather than in a general way. Such an educational campaign is characteristic of present-day ideas and ideals of social progress, and cannot fail to have a beneficial effect on social conditions.

THE AMINO-ACIDS IN THE BLOOD

With his characteristic energy and ingenuity the German physiologist, Emil Abderhalden, has at length succeeded in demonstrating the presence of amino-acids in the serum of the blood by the direct isolation and identification of a number of these protein derivatives.[1] That amino-acids are to be found in the circulating blood could scarcely be doubted since the exploratory work of Van Slyke and Meyer, Folin and others in this country has pointed to the probable absorption and distribution of the products of protein digestion in the form of amino-acids. There have long been evidences of the existence of non-coagulable nitrogenous compounds other than urea in the blood. The analytic figures, however, show that the residual margin for this type of derivative is very narrow, and that the content of such substances circulating at any moment in the blood-stream must be extremely small at best. Abderhalden has outdistanced his predecessors by working on a large enough scale, literally with dozens of gallons of blood, to succeed in separating the actually occurring products as such. One is reminded here of the enormous task which Krüger and Salomon[2] undertook some years ago when they analyzed 10,000 liters of urine in order to determine the nature of the small quantity of purins other than uric acid which are ordinarily found in the secretion of the human kidney. The thought of a university chemist manipulating from 50 to 100 liters of blood at a time reminds one more of a factory than of a physiologic laboratory. It was by such heroic efforts, however, that small quantities — not more than 0.4 gm. of pure substance in any single instance — of the following amino-acids were obtained and identified: prolin, leucin, valin, alanin, glycocoll, aspartic acid, glutaminic acid, arginin, lysin and histidin. Even in starvation the blood was not found entirely devoid of amino-acids, so that Abderhalden suggests the possibility that the amino-acid content of the blood may perhaps be kept at a constant level somewhat as is its quota of sugar. The future may accordingly find it appropriate, as he remarks, to speak of a hyper-amino-acidemia or hypo-amino-acidemia representing specific alterations in the level here referred to. No sooner have we recorded one evidence of progress in this field of research[3] than another step in advance is ready to be told.

1. Abderhalden, Emil: Nachweis von freien Aminosäuren im Blute unter normalen Verhältnissen, Ztschr. f. physiol. Chem., 1913, lxxxviii, 478.

2. Krüger, M., and Salomon, G.: Die Alloxurbasen des Harns, Ztschr. f. physiol. Chem., 1898, xxiv, 364.

THE VORACITY OF CERTAIN DIABETICS

Through the recognition of the intimate relation of the sensation of hunger to contractions of the empty stomach, which may now be accepted as an established physiologic fact,[4] the nature of the polyphagia which attends certain conditions of disease may now be investigated. The great voracity of animals suffering from pancreatic diabetes is well known to laboratory workers. In man, comparable polyphagia is sometimes seen in the course of diabetes mellitus or marasmus arising from other causes. The accentuated desire to eat cannot be ascribed to the state of existing undernutrition alone; for it is usually missed entirely in numerous other even more extreme cachexias in which food is persistently refused. Recent observations of Luckhardt[5] at the University of Chicago clearly indicate that in the diabetic state the polyphagia is attributable to true hunger rather than to some perverted appetite induced by the condition involved. A comparison of the contractions of the stomach before and after operative removal of the pancreas in dogs shows that the gastric contractions not only persist with singular vigor after the operation, but become even more intense with the progress of the induced disease, just as the voracity of the patient increases during the terminal stages of the disease. Accordingly, the desire for food is the result of true hunger pains brought about by real hunger contractions of the stomach. Luckhardt notes the surprising fact that the smooth musculature of the stomach shows an untiring activity at a time when the skeletal musculature of the body is becoming extremely susceptible to rapid fatigue; in fact, the strength of the gastric contractions has been seen to increase as the power of the voluntary musculature is diminished. We are here dealing with a desire to eat in no wise attributable to a morbid longing for food or a perverted appetite.

3. Compare editorials: In What Form Are Protein Digestion Products Absorbed? THE JOURNAL A. M. A., Dec. 20, 1913, p. 2245; What Becomes of the Protein Digestion Products? Jan. 24, 1914, p. 303. Intravenous Nutrition, Jan. 31, 1914, p. 385. A New Method of Investigating the Circulating Blood, Feb. 7, 1914, p. 459.

4. The Gastric Movements in Hunger, editorial, THE JOURNAL A. M. A., Sept. 27, 1913, p. 1044; The Call of the Empty Stomach, ibid., Oct. 4, 1913, p. 1300.

5. Luckhardt, A. B.: The Cause of Polyphagia in Pancreatic Diabetes, Am. Jour. Physiol., 1914, xxxiii, 313.

SURGEON-GENERAL OF THE NAVY

February 7, in accordance with his policy of making appointments for one term of four years, Secretary Daniels sent the name of Medical Inspector William C. Braisted to the Senate to succeed Dr. Charles F. Stokes as Surgeon-General of the Navy. Secretary Daniels said further,[1] in a tribute in which we join, "Dr. Stokes has completed a four-year term of able administration, during which he has effected many important and beneficial changes; he has brought the bureau of medicine and surgery, the naval hospitals, and ships' medical departments to a high standard of efficiency. The Secretary has the highest opinion of the ability and splendid service rendered by the retiring Surgeon-General. Under his administration important reforms have been inaugurated. Never has the standing or reputation of the medical corps of the Navy been so high as it has reached under the administration of Dr. Stokes." The new Surgeon-General was born in Ohio, Oct. 9, 1864, and entered the Navy as an assistant surgeon in 1890. He was recently promoted to his present rank of medical inspector and has been serving as fleet surgeon of the Atlantic fleet.

PRACTICAL EUGENICS

The extent to which the good and bad qualities of one generation are transmitted by heredity to another generation is an unsettled question; but there is no doubt that the conditions surrounding the fetus *in utero* have much to do with the vigor with which it enters on its extra-uterine life. Prenatal care of the mother is a logical extension of the philanthropy which is seeking to conserve the vital resources of the nation by the care of infants. Provision for such antenatal care has been made for the past four years by the Committee on Infant Social Service of the Women's Municipal League of Boston, and its example has been followed in a number of other cities. The committee now has made its report for the first four years of its existence with statistics for a part of the fifth year. The work of the committee has been restricted to the visiting of pregnant women once in ten days by a competent nurse, who takes blood-pressure, examines urine and advises regarding diet and regimen, but gives no drugs, with the exception of cascara. The success of the work is judged by the decreasing frequency of eclampsia, stillbirths, premature births, and by the increase in the weight of the babies. In all these particulars they record a steady improvement as the result of prenatal care. Thus the figures for percentage of cases of threatened eclampsia for the first four years are, respectively, 10.2 per cent., 4.8 per cent., 1.7 per cent. and 0.0 per cent. The percentage of stillbirths fell from 2.6 per cent., the average for three years, to 1.7 per cent. for the fourth year. The corresponding figures for the premature births were 1.7 per cent. and 0.7 per cent. A slight increase in the average birth-weight is also recorded. These figures, the committee believes, present sufficient evidence of the effectiveness of prenatal care to justify the continuance of such work. The expense is slight, amounting to about three dollars a year per patient. It is intended to extend this treatment to private patients, the nurse reporting to the family physician instead of to the hospital, as is the case with the public work.

1. Army and Navy Register, Feb. 14, 1914.

DOCTORS CAUGHT IN AN ANTISPITTING CAMPAIGN

The recent article by Stiles,[1] concerning the carelessness of some physicians in matters of hygiene, has been attacked from various sources as being too caustic and as exaggerating the facts. In Chicago recently an antispitting campaign was inaugurated by the police and health departments. Instructions were given to the police to enforce one of the various antispitting ordinances. The results of a day's campaign are thus reported in one of the Chicago dailies:

> Two physicians, Dr. O. H. B—— and Dr. A. H.——, were fined $2 and costs each by Judge Sabath yesterday for spitting. Seventy other men were fined $1 and costs. One was fined by Judge Dolan. Twenty-five were fined by Judge Goodnow in Hyde Park and three in Englewood. Dr. U. G. D—— spat on the floor of a State Street car at Forty-Seventh Street. A patrolman was riding on the car and arrested the physician.

On the other hand, it is reported that a conscientious policeman who caught himself in the act of expectoration took himself to the court and paid his fine.

1. Stiles, Charles Wadddell: In How Far Has the Doctrine of Cleanliness and Public Health Permeated the Medical Profession? South. Med. Jour., 1913, vi, 783.

THE ESTIMATION OF ACIDOSIS IN DIABETES

The symptoms of acidosis are at present commonly taken as indicating the direction of treatment and the prognosis in diabetes. The question as to what features of the acidosis complex should serve as a guide arises frequently. The estimation of one or more of the "acetone bodies," that is, the determination of the degree of ketonuria, has been taken into chief account by some students of the subject. It must be remembered, from the standpoint of the acid-intoxication theory, that acetone, aceto-acetic acid, and beta-oxybutyric acid are not identical in their mode of behavior. It has now been demonstrated repeatedly that the pressure of carbon dioxid in the alveolar air falls with the increasing acidosis of diabetes, rises under the administration of an alkali like sodium bicarbonate, and during coma reaches a very low point. Kennaway, Pembrey and Poulton[2] have come to the conclusion that the estimation of the alveolar pressure of carbon dioxid by Haldane's method is at present the best guide in the prognosis and treatment of diabetes. Diabetic patients discharging large quantities of sugar in the urine may have a normal value for the alveolar carbon dioxid; the determining factor appears to be the extent of acidosis. Estimations of the total acetone bodies are not of such importance from the prognostic point of view, for the variations in the absolute amounts do not run parallel with the alveolar

2. Kennaway, E. L., Pembrey, M. A., and Poulton, E. P.: Observations on Acidosis, Jour. Physiol., 1913, xlvii, p. x.

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carbon dioxid and give no indication of the onset of coma. The chief drawback at present to estimating the degree of acidosis by the alveolar carbon dioxid tension lies in the fact that it requires a special technic which, at present, few clinicians have mastered.

Medical News

ALABAMA

New Officers.—Mobile County Medical Society at Mobile, January 31: president, Dr. Ruffin A. Wright; secretary, Dr. Willis W. Scales, both of Mobile.——Clarke County Medical Society at Grove Hill: president, Dr. Isham Kimbell, Jackson; county health officer, Dr. John A. Kimbrough, Thomasville.——Marshall County Medical Society: president, Dr. Phocion B. Lusk, Guntersville; secretary-treasurer, Dr. William E. Noel, Boaz.

Personal.—Dr. Charles A. Grote of the State Board of Health has been studying the work of the North Carolina State Board of Health at Raleigh, and also inspecting the methods of the local boards of health at Asheville and elsewhere.——Dr. Robert B. Hays has left Woodward and accepted a position with the Birmingham Infirmary.——Patients, former patients and friends of the Lynnhurst Sanatorium presented Dr. Ante Costa Watts, Birmingham, the medical director, with a microscopic outfit.——Dr. William M. Caffee, Birmingham, who was operated on recently for appendicitis, has recovered.——Dr. Marion T. Davidson, Wylam, was seriously burned by an explosion of chemicals in the Wylam Hospital, January 30.

ARKANSAS

Sanatorium to Open.—Drs. Malcue G. Thompson and Murray G. Thompson, Jr., Hot Springs, will open a sanatorium at Ashdown in the New Sanderson Building.

New Officers.—Pulaski County Anti-Tuberculosis Society at Little Rock, January 30: directors, Drs. Charles W. Garrison and Orange K. Judd, both of Little Rock.

Health and Vital Statistics Laws.—Until a year ago Arkansas had no state board of health. A law was enacted by the legislature at that time creating a board of health and also providing for the registration of vital and morbidity statistics through state and local registrars. This legislation is in accord with the model law approved by the Census Bureau, the American Public Health Association and the American Medical Association, and places Arkansas in line with the progressive states in respect to health legislation. In commenting on this and the active health propaganda which has characterized the last decade, the *Arkansas Democrat* says concerning the new health department: "An entirely new conception of public duty has been forced on our lawmakers in this respect, and now for the first time in the history of Arkansas, our vital resources—men, women and children—are to receive the same governmental care and protection as our soil, rivers, forests, hogs, cattle and horses. Ten years ago it would have been impossible to pass the law under which the new State Board of Health is operating, notwithstanding the fifty years of successful experience in New York, Pennsylvania and Massachusetts in public health administration. It has taken years of energetic, unselfish and unremitting effort to bring the Southern states to a commitment of the truth that the protection of the public against preventable disease is a fundamental duty of state government."

ILLINOIS

Hospital Dormitory Plans Ready.—Plans for the dormitory addition to St. Joseph's Hospital, Elgin, have been completed, and work on the building will begin early next month. The cost of the addition will be approximately $25,000.

Personal.—Dr. David Lieberthal has resigned as professor and head of the department of dermatology and syphilography of Bennett Medical College.——Dr. Samuel Amberg of the Otho S. A. Sprague Memorial Institute, Chicago, has been elected a corresponding member of the Society of Internal Medicine and Pediatrics, Vienna.——Dr. C. Max Hawley, assistant superintendent of the Watertown State Hospital, has been transferred to a similar position at the Elgin State Hospital.——Dr. Clesson C. Atherton, physician to the Lincoln schools, has been appointed assistant superintendent of the Watertown State Hospital.——Dr. Wilson K. Dyer of the staff of the Watertown State Hospital, has resigned to take up private practice.

INDIANA

Laboratory Incorporated.—The Fort Wayne Medical Laboratory has been incorporated with a capital of $5,000, by Dr. Bonelle W. Rhamy, Mary Rhamy and Robina L. Orvis.

Personal.—Dr. Quincy M. L. Williams, Folsomville, was shot and seriously wounded by his brother-in-law, February 5, as the results of a family feud.——Dr. Herman H. Kamman, Columbus, was knocked down by his motor-car, February 3, fracturing two of his ribs——Dr. John W. Cook, Pendleton, is reported to be critically ill with pneumonia.

Small-Pox in Indianapolis.—During January there were 83 cases of small pox in the city, and during February the disease has increased to such an extent that an order compelling vaccination of all schoolchildren, under penalty of exclusion from the schools, has been issued by the Health Department. It is said that the small-pox situation is costing the city $100 a day.

Trachoma in Bartholomew County Schools.—Trachoma was found to exist in twenty schools, in eight townships, one town, and one city. Forty-eight cases of well-marked trachoma were found in the 3,969 schoolchildren examined, or 1.2 per cent. Twenty cases of trachoma were found in eleven county schools and one township consolidated school. Fourteen cases were found in six Columbus schools, eleven cases were found in the East Columbus consolidated school, and three in the high school, town of Hope. In the country schools, six cases were found in one school in Wayne Township. For the above it will be noted that trachoma is most prevalent in the two townships, Columbus and Wayne. Thirty-four cases were found to exist in these two townships.

KANSAS

New Officers.—Harper County Medical Society, at Anthony, January 28: president, Dr. George S. Wilcox, Freeport; secretary, Dr. Horace L. Gallaway, Anthony.

State School in Quarantine.—The Kansas State School for the Blind, Kansas City, has been closed and quarantined by the state health officials on account of the presence of a case of small-pox.

Personal.—Dr. Uriah I. Ward, Hutchinson, fell on the sidewalk at the Masonic Home, Witchita, January 25, suffering a compound fracture of the hip.——Dr. Roscoe T. Nichols, Liberal, has been appointed student physician to the State Agricultural College, Manhattan.——Dr. T. H. McLaughlin, for the last fourteen years a medical missionary in Africa, has returned to the United States to resume practice in Topeka.

KENTUCKY

Trachoma in Louisville.—Drs. Oakley and Moore of the United States Public Health Service, who have been investigating trachoma in Kentucky, report that they have found 176 cases among 4,558 children examined in the county outside of the city. In Louisville 450 cases have been found in the schools.

Small-Pox in the Legislature.—Senator Porter, a member of the legislature is reported, under date of February 4, to have small-pox, and a conference of legislators was held with the State Board of Health for the adoption of measures to prevent its spread. It is said that a number of the members have not been vaccinated.

Personal.—The following members have been added to the staff of the St. Elizabeth's Hospital, Covington: Dr. John L. Phythian, Newport, and Drs. R. W. J. Irtel, Josiah G. Furnish, Elmore B. Backsman, Newport; Charles G. Preck, H. Clay White, O. Lyle, Reynolds, and Michael M. Behrman, Covington.——A fire in Covington, February 4, destroyed the office of Dr. Charles A. Nevitt.

Preventable Diseases.—In the biennial report of the State Board of Health, it is shown that in the thirty-three months of the operation of the vital statistics law there have been reported 169,854 births, 83,778 deaths, of which 33,866 were due to preventable diseases. For each of the deaths reported, there were twenty-six cases of illness from the same cause, 541,856 illnesses which should have been prevented.

MARYLAND

New Hospital.—Ground has been broken for the new South Baltimore Eye, Ear, Nose and Throat Hospital on Light Street,

to cost $50,000 and to have about fifty beds. The hospital was started twelve years ago by Drs. Harry E. Peterman and James Boardley and much charitable work has been done since its opening.

Small-Pox in Baltimore.—An additional quarantine hospital for small-pox cases was established February 10, near Texas, Baltimore County. There were 75 well developed cases of small-pox in the county; 40 were being cared for in the City Quarantine Hospital, and an equal number of suspected cases were under observation at the Sydenham Hospital.

Must Report Sore Eyes.—An ordinance requiring physicians to report to the Health Department within twelve hours after diagnosis all cases of sore eyes among infants and children was introduced in the second branch of the Baltimore city council by Dr. George Heller. This bill was introduced that steps to lessen blindness might be taken. Epidemic meningitis and infantile paralysis were also added to the list of contagious diseases reportable to the Health Department.

Personal.—Dr. Fred Caruthers, Baltimore, formerly coroner of the Northeastern district, was operated on at the Franklin Square Hospital for tetanus resulting from blood poisoning, which occurred two days after an ulcerated tooth had been extracted. Dr. Caruthers was reported as slightly improved, but his condition is still serious.——Dr. Charles L. Mattfeldt, Catonsville, who has been a patient at St. Agnes' Hospital for the past ten days, is improving.——Dr. Harry Adler, Baltimore, slipped on a rug last week at the home of his father and broke his leg just above the ankle.—Dr. Charles Bagley, Jr., who has been associated with Dr. Harvey Cushing at the Peter Bent Brigham Hospital, Boston, Mass., has resumed practice in Baltimore.

Report of the Mental Hygiene Committee.—The Mental Hygiene Committee completed a highly successful first year on January 7. The objects of the committee are set forth under the following headings: (1) Prevention of nervous and mental breakdown by early treatment, practical advice and material assistance, when necessary. (2) After-care and reestablishment in the community of patients discharged or paroled from state hospitals. (3) Social service in cooperation with organized and private charity and the hospitals. (4) To familiarize the public with the causes and means of prevention of mental disease, feeble-mindedness, delinquency and criminality. (5) To do and effectuate everything possible to improve and elevate the standard of care for the mentally afflicted in Maryland. During the year 320 cases have been referred to the committee from the following sources: Springfield State Hospital, Spring Grove State Hospital, Rosewood State Training School, Crownsville State Hospital, Supervisors of City Charities (Bay View), Phipps Psychiatric Clinic, Sheppard and Enoch Pratt Hospital, Juvenile Court, Bureau of Statistics and Information, Magistrates Dean, Supplee and Sayler, and the Northeastern, Central and Western Police Stations, the Federated Charities, St. Vincent de Paul Society, Henry Watson Children's Aid Society, Federated Jewish Charities, Lunacy Commission, private physicians and others. All the state societies in which there is a Mental Hygiene Committee will hold a meeting in Baltimore May 25. The following states will be represented: Massachusetts, New York, Illinois, Connecticut, Pennsylvania, North Carolina and Maryland, and the National Committee for Mental Hygiene.

Recommendations for Health Service Administration.—Surgeon Carroll Fox, U. S. P. H. S., after investigations carried on for a period of six months, has made elaborate and important recommendations for the administration of the State Public Health Service. Among these recommendations were: that the state be divided into not less than ten districts, each district to be placed in the charge of a physician trained in sanitary science, assistants, nurses, inspectors and a clerk; that the duties of these district sanitarians be well defined, and include supervision of the work of all health officers, enforcement of laws, inspection and investigation of nuisances, and such other duties as may be required of him by the state; that incorporated towns, and towns not incorporated, of more than 1,000 population be required to appoint a health commissioner to assist the district health officer in the enforcement of his duties; that each town be required to put aside 2 per cent. of its available funds to be devoted to the betterment of the public health; that comprehensive laws be enacted making it compulsory that plans providing for water-supply, sewerage and refuse disposal systems be approved by the State Health Department; that special attention be given to the sanitation of public schools; that a state-wide campaign be carried on against typhoid fever; that a study be carried on by the state of pellagra, trachoma, hookworm, infant morbidity and mortality, and malaria; that laws be enacted for factories, stables, hotels, restaurants, etc., and that the maintenance of the sanitation of dairies, milk-supplies, etc., be taken from the hands of the State Live Stock Sanitary Board and be placed in the hands of the State Department of Health.

MASSACHUSETTS

Personal.—Dr. Conrad Bell has succeeded Dr. C. Richard Bell as member of the Board of Health of Waltham.——Dr. John T. Reynolds has been appointed a member of the Board of Health of Quincy.——Dr. A. F. Mahoney has been elected city physician of Chelsea, vice Dr. Frank H. Chase.

Hospital Notes.—The new Children's Hospital for Tuberculosis at Mattapan was dedicated January 29.——Fire in the Lawrence General Hospital, recently, placed the lives of seventy-five or more patients in peril, but was extinguished without casualties or panic, thanks to the cool-headedness of the nurses on duty.

Prenatal Clinic.—The first prenatal clinic, which was held at the Peter Bent Brigham Hospital, Boston, under the auspices of the Milk and Babies' Hygiene Association for prospective mothers has submitted an examination to be taken by those in the care of the clinic. A nurse will visit each of these patients every ten days to be sure the instructions have been carried out; after the birth of the child, the nurses will make daily visits for ten days.

MICHIGAN

Personal.—Dr. Arthur W. Skidmore, Three Rivers, has been elected head of the city Board of Trained Nurses.——Dr. Walter A. Briegel, city health officer of Tecumseh, is ill at his home with scarlet fever.

Small-Pox in Lapeer County.—Dr. W. H. Smith, of St. Clair, after an investigation of the small-pox situation in Lapeer County, reports to the secretary of the State Board of Health that he found two hundred cases and that many of them had been concealed and not previously reported to the health authorities.

MINNESOTA

Adopts Elective System.—To a limited extent the elective system has been adopted in the medical department of the University or Minnesota, Minneapolis.

Personal.—Dr. Joseph Nicholson, physician-in-charge of the Northwestern General Hospital, Brainerd, has been asked to establish and take charge of a hospital at El Basan, Albania.——Dr. W. O. Henry Paul, Owatonna, has been appointed superintendent of the sanatorium conducted in connection with the Immanuel Hospital, Mankato.

Would Consolidate Examining Boards.—The chairman of the committee in charge of the investigation of state functions having to do with public health, safety and agriculture, has proposed to the executive committee of the state economy and efficiency commission, a plan to consolidate the various examining boards under one bureau. At the head of this bureau is to be a director, under whom will be three commissioners, one of whom will have control of the various boards of medical, dental and pharmaceutical licensure, vital statistics study and control of epidemics, bacteriologic researches, Pasteur institutes, etc.; the second will have charge of the inspection of food for hotels and institutions; and the third will be in charge of public safety, fire prevention and similar work.

MISSOURI

State Board Meeting.—The State Board of Health met in St. Louis February 9 to 12 to examine applicants for license to practice and to hear charges against several physicians.

Physicians Must Not Advertise in Newspapers.—At a meeting of the Livingston County Medical Society at Chillicothe, February 5, a resolution was adopted that the physicians withdraw their professional care from the local newspapers, and that they do not allow their names to be mentioned in newspapers in connection with accidents or other matters of professional attendance.

New Officers.—Holt County Medical Society, at Oregon, January 8: president, Dr. O. W. Nauman, Craig; secretary, Dr. Walter S. Wood, Oregon.——Saline County Medical

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Society, at Marshall, January 13: president, Dr. Floyd W. Tuttle, Mt. Leonard; secretary-treasurer, Dr. George A. Aiken, Malta Bend.——Cooper County Medical Society, at Boonville, January 6: president, Dr. Porter Williams, Tipton; secretary, Dr. C. S. Roberts, Boonville.——Linn County Medical Society, at Brookfield: president, Dr. Charles E. Jenkins, Brookfield; secretary, Dr. Foster W. Burke, Laclede.——Harrison County Medical Society, at Bethany: secretary, Dr. Cushman H. Vandivert, Bethany.——Ray County Medical Society, at Richmond: president, Dr. Robert Sevier; secretary, Dr. James E. Ball, both of Richmond.——Polk County Medical Society, at Morrisville: president, Dr. R. Lee Russell, Himansville; secretary, Dr. J. F. Roberts, Bollivar (reelected).——Greene County Medical Society, at Springfield: president, Dr. George B. Lemmon; secretary, Dr. Thomas O. Klingner.——Johnson County Medical Society, at Warrensburg: president, Dr. Henry Park, Knobnoster; secretary-treasurer, Dr. Oscar B. Hall, Warrensburg.——Clinton County Medical Society, at Lathrop: president, Dr. John F. Kimsey; secretary, Dr. F. H. Fulton, Plattsburg.

St. Louis

Sanitary Bill Boards.—After eight years of legal and verbal warring the bill board companies have surrendered and will comply with the law. As constructed at present, the bill boards are a menace to property in case of fire, afford a refuge for criminals and attract insanitary and unhygienic deposits.

No Laundry Bundles in Food Shops.—Butcher shops, restaurants, groceries and other food dispensing shops will not be permitted in the future to act as agents for laundries. The Health Department has ordered the laundry companies to discontinue agencies in food shops on account of the danger of spreading diseases through handling laundry bundles in these shops. The laundry companies readily acquiesced with the order.

Sanitary Inspection.—On request of Postmaster Selph the United States Public Health Service has detailed Dr. M. J. White to examine the sanitary condition of the postoffice buildings. This is the first instance where the postoffice buildings have received sanitary inspection. The examination will be made monthly. Medical inspection of employees will probably become a routine procedure in addition to the inspection of the buildings.

Nine-Hour Day for Nurses.—The state factory inspector has notified the hospital board that women employees of the city hospitals must not work more than nine hours a day, as required by the state law. The women nurses and other women employees have been working twelve hours. The change will require the employment of approximately one-third more nurses and an increase of the hospital budget of about $8,000 annually.

MONTANA

Addition to Hospital.—The addition to St. Joseph's Hospital, Lewistown, erected at a cost of about $40,000, was opened last month.

Health Officers of State Meet.—The first annual meeting of the eastern division of the Montana Health Officers' Association was held at Billings, January 30. Dr. Mott. H. Arnold, Billings, was elected secretary of the organization.

Seek Eugenic Law.—At a meeting of the Gallatin County Medical Association at Bozeman, January 24, a campaign to obtain eugenic marriage laws for the state was begun. Copies of the Wisconsin eugenic law were discussed, and members of the state and county bar associations took up various phases of the subject.

Personal.—Dr. John M. Scanland, Helena, has been reappointed superintendent of the State Hospital for Insane, Warm Springs, vice Dr. Arthur C. Knight, Butte, resigned.——Dr. A. P. Van Kirk, who recently resigned from government service at Old Fort Belknap, has entered practice at Lamont, Wash. and has been appointed local surgeon of the Spokane, Portland and Seattle Railway.——Dr. Sanford H. McCall, Missoula, has been elected president of the Missoula County Medical Society.

NEBRASKA

Hospital Notes.—A movement has been inaugurated for the erection of a negro hospital in Omaha.——An addition is to be built this spring to the Swedish Mission Hospital, Omaha, to cost from $60,000 to $70,000.——A new building is to be erected at the State Tuberculosis Sanatorium, Kearney, this year, at a cost of $40,000. The new building will be used exclusively for hospital purposes, while the old building now in use will be occupied as offices and living rooms for the superintendent and assistants.

Personal.—Dr. George P. Shidler has resigned as city physician of York, it is reported, on account of failure to receive the support of the mayor regarding an order for compulsory vaccination in the schools. Small-pox is reported to have occurred among the pupils of a business college. An order for the vaccination of all the students was disregarded by the head of the school, and in this he was supported by the mayor.——Dr. Robert C. Knode, Gering, has been appointed local surgeon of the Union Pacific System.

New Officers.—Franklin County Medical Association at Upland, February 3: president, Dr. William F. Dugan, Campbell; secretary-treasurer, Dr. Hal C. Smith, Franklin.——Elkhorn Valley Medical Association at Fremont, January 20: president, Dr. Frank Jensen, Newman Grove; secretary, Dr. Harry L. Wells, West Point. The association will hold its July meeting at Norfolk.——Lincoln Physicians' Research Club: president, Dr. Richard H. Spradling; secretary-treasurer, Dr. F. B. Dwiggins.——Colored physicians, pharmacists and dentists of Omaha organized an association January 21. Dr. August G. Edwards was elected president, and J. Merchant, Ph.G., secretary.——York County Medical Society at York: president, Dr. Edwin B. Hanna; secretary-treasurer, Dr. Edmund G. Zimmerer, both of York.——Dawes County Medical Society at Chadron, January 14: president, Dr. Andrew V. Stephenson, Crawford; secretary-treasurer, Dr. George W. Deemer, Chadron.

NEW YORK

New Officers.—Fulton Academy of Medicine, February 5: president, Dr. Herman W. Schlappi; secretary-treasurer, Dr. Everett A. Gladman.

Impostor Sought.—Health Commissioner Francis E. Fronczae, Buffalo, reports that a woman has been making a house-to-house canvas of the city, representing herself as being connected with the health department, and attempting to sell a medical book.

Personal.—Dr. Henry L. K. Shaw, Albany, has been appointed director of the department of child hygiene of the State Department of Health.——Dr. William Behan has been elected superintendent of the Mountain Sanitarium of the County of Broome.

Demand for Rural Hygiene.—The members of the New York State Grange at a recent convention, when told that the death-rate in the state in cities and towns below 8,000 was 15.4 per thousand, as against 13.7 in the larger cities, demanded a division of rural hygiene in the organization of the State Board of Health.

Matteawan Overcrowded.—At present there are 850 inmates in the State Hospital for the Criminal Insane, Matteawan, more than ever before at any one time. The superintendent states that this overcrowding is largely due to the fact that New York County has been dumping insane criminals into his institution, and he says that he will refuse to accept any more of these insane criminals from New York County.

New York City

Annex for St. Mark's Hospital.—At a dinner recently given to Benjamin T. Tilton, chief surgeon of St. Mark's Hospital, it was announced that a $150,000 annex was to be added to the hospital.

Honor State Health Commissioner.—Dr. Hermann M. Biggs, State Commissioner of Health, was the guest of two hundred physicians at a dinner at the Biltmore, February 7, at which Dr. George David Stewart presided as toastmaster.

Harvey Society Lecture.—The next lecture in the present course of Harvey Society lectures will be given February 28. Prof. Richard P. Strong, Harvard University, will lecture on "The Etiology of Oroya Fever and Verruga Peruviana."

Women as Hospital Interns.—The Commissioner of Charities has under consideration the question of appointing women as interns at the Metropolitan Hospital. At present these positions are open to men only, but it is felt that as a year's hospital training is soon to be required of every graduate in medicine before a license to practice medicine is issued, that this opportunity for training should be open to women now entering the profession.

Hospital Annex Dedicated.—The new hospital in connection with the work of the Hebrew Infant Asylum at Kingsbridge Road and University Avenue, the Bronx, was dedicated February 8, at the nineteenth annual meeting of the asylum.

The building cost $25,000 and here each infant will be kept in a single room for three weeks under careful observation until the physicians decide that the child is at least free from the evidences of disease and may safely be transferred to the wards.

To Facilitate Early Diagnosis of Diphtheria.—Despite the fact that there are a number of collecting stations in the city where throat culture for the diagnosis of diphtheria may be left, and that these specimens are collected every evening and reported on by telephone before 10 o'clock the following morning, the Department of Health feels that time might be gained, and has under consideration a plan for the installation of incubators at some of the collecting stations, particularly those that are open all night.

Operations on Adenoids and Tonsils.—The Public Health Hospital Budget Committee of the New York Academy of Medicine has adopted resolutions recommending that all operations on tonsils should be performed in a hospital or in such dispensaries as have operating rooms and recovery wards; that private hospitals of the city be requested to cooperate with the health department in the care of children with enlarged tonsils; that the hospitals be provided with adequate facilities for such cases; that the city compensate private hospitals for such service, and that the public hospitals be requested to undertake such cases without compensation.

Health Department Warns Against "Cure-Alls."—Dr. Sigismund S. Goldwater, the new health commissioner, has issued a bulletin cautioning the public against putting too much faith in radium as a cure for cancer. The warning was issued for the purpose of protecting the public against fakers who may trade on the public's credulity. At the same time Dr. Goldwater said that the Board of Health had refused the request of Dr. Hans Karfunkel, a Berlin physician, who has asked permission to try a modified Friedmann tuberculosis serum in this city. The present board of health stands by the former board which adopted the resolution that no serum containing living bacilli should be employed in the treatment of tuberculosis patients without the board's permission.

Central Council of Public Health.—At the meeting of the Public Health Federation of the City of New York, Dr. John H. Huddleston officiated as chairman and was elected head of the Central Council of Public Health. The general aims of the Council were set forth as follows: To provide for conferences of private health organizations. To act as a clearing house for the exchange of ideas and information in reference to the public health of the city. To coordinate and prevent duplication of the various public health activities of the city. To promote cooperation in the investigation and study of health problems. To study the city budget in its relation to public health. To take an active interest in the administration of all such branches of the city government as have a direct bearing on public health.

Lack of Efficiency Charged in Dealing with Typhoid.—The Bureau of Municipal Research which has completed an investigation of the methods employed in handling the typhoid fever epidemics in this city in 1911 when there were 1,133 cases, and in 1913 when there were 948 cases, charges that there was lack of efficiency in dealing with these epidemics. It is stated that the experience of 1911 left no excuse for failure to handle the situation in 1913. The report points out twenty-eight defects in the method employed in 1913. Some of these defects were delay in reporting cases and lack of effort to secure the cooperation of other city departments in improving the notification of typhoid fever cases. Inspection and action on inspection was too long delayed; inspector's reports were inaccurate and incomplete and lacked in uniformity; cases had not been taken seriously enough when only 20 or 30 per week were reported, and typhoid vaccine had not been explained to the public. It is claimed that had telephones been used, and had inspection and action on it been prompt, many cases of typhoid would have been prevented. The belief was expressed that at a conservative estimate $100,000 a year should easily have been saved in wage loss and doctor's and funeral bills due to preventable typhoid.

NORTH CAROLINA

Summer Camp Site.—The War Department has purchased a large tract of land, east of Asheville, where it will establish a summer camp for state troops and the national guards of various adjacent states.

To Erect and Endow Hospital.—Dr. John W. Long, Greensboro, has provided a fund to be placed in the hands of the Foreign Mission Board of the Methodist Episcopal Church in South Africa, to erect and maintain a hospital for the treatment of special diseases incident to South Africa, at some advantageous point in that country. The hospital is a memorial to his daughter, Miss Mary Long.

Personal.—Dr. Francis J. Clemenger, Asheville, sailed for London, January 31.——Dr. W. Herbert Wootten, Davidson, was shot by a druggist, February 9, while making a professional call at the home of the latter.——The officers of Drs. Charles L. Summers, Roscoe L. Wall, Albert D. Edwards, Van McK. Long, and Dr. Wingate M. Johnson, Winston-Salem, were destroyed by fire in the O'Hanlon Building.

Hookworm Education.—The report of Dr. C. L. Pridgeon, assistant secretary of the State Board of Health for the Eradication of Hookworm Disease, for the year 1913 shows the interesting fact that of the one hundred counties of the state, ninety-nine have made supplementary appropriations to aid in the work being done by the Rockefeller Foundation and the State Board of Health. Several of the counties which were surveyed two years ago have made appropriations for a second canvass. Prior to 1913 there were 217,033 people examined in the state for hookworm, and 88,119 were found infected and treated, or 40 per cent. During 1913, 107,887 people were examined, and 23,533 were found infected, or 21.8 per cent., showing the value of the previous educational work. In addition, the work of private physicians, as reported to the State Board of Health regarding hookworm, shows that prior to 1913 they had treated 40,568, and in 1913 they treated 11,905 cases, making a total treated by private practitioners of 52,473 cases, which, added to the above, shows that North Carolina in the past few years, as shown by the records in the State Board of Health office, there have been treated for hookworm, 164,145 patients. In addition to making examinations of one-seventh of the state's population, the hookworm staff of the state board have distributed nearly one million pieces of literature relating to hookworm, sanitation and kindred topics, besides delivering 1,089 public lectures, listened to by upward of 100,000 citizens. This does not include the hundreds of other daily lectures given during the period mentioned by the field demonstrators in making the clinical examinations. The work for 1914 will be prosecuted with increased vigor.

NORTH DAKOTA

Small-Pox Near Canadian Line.—Small-pox in several of the northern counties of the state, although looked after carefully by the State Board of Health, with proper quarantine, the enforcement of vaccination, etc., has induced the Canadian authorities to quarantine against St. John, near the northern border. The Great Northern railroad has been restrained from selling tickets for points north, and train crews have been compelled to change at Rolla instead of at St. John. The disease is well under control and the boundary quarantine will soon be raised.

PENNSYLVANIA

Personal.—Dr. Edwin A. Curry, Danville, suffered a cerebral hemorrhage several weeks ago.——Dr. Watson Marshall has been appointed demonstrator of laryngology in the University of Pittsburgh.

Biologic Research Society Holds Open Meeting.—The Society for Biological Research of the University of Pittsburgh held its first open meeting January 29, when Dr. Ross G. Harrison, of Yale University, delivered an address on "The Life of Tissues Outside the Organism."

New Dispensary.—A free medical dispensary has been installed in the rooms of the New Convent Mission, at Reed, Crawford and Pride Streets, Pittsburgh. Dr. Frederick V. H. Wooldridge is physician in charge, and Dr. Alexander M. Stevenson is in charge of the nose and throat department.

Norristown to Limit Admission of Patients.—The trustees of the Norristown State Hospital for the Insane have adopted resolutions so that all the counties of the southeastern district may be entitled to a "ratable and equitable privilege." The maximum limit of patients to be received will be 1,500 in the male department and 1,550 in the female department. With every commitment must be presented a certificate signed by the chief resident physician of the respective department and by a member of the board of trustees from the county whence the patient is sent, and of another member of the board of trustees from some other county, approving that application or the admission of the patient to the hospital,

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otherwise the officers of the institution are instructed to refuse to admit the patients.

Winter Cholera at Grove City.—It is reported that 50 per cent. of the 4,000 people in Grove City have been affected with a disease spoken of as "winter cholera." Business and industrial plants have suffered on account of illness among their employees, but no deaths have occurred. The disease is under investigation by the state health commissioner and his assistants, who reported, February 8, that it had succeeded in checking the outbreak of cholera at Grove City. The engineer sent to that town found the trouble due to the fact that air pressure was used in forcing water out of the wells, from which the municipality derived its water supply. The water was treated with copperas, on February 7. The report of the day before showed that 110 new cases developed. February 7 there were 57 new cases, and February 8, only 12.

Philadelphia

Hospital Site Purchased.—Archbishop Prendergast has acquired a tract of land of 11 acres in West Philadelphia, on which it is proposed to establish a large hospital. The site is valued at $200,000.

Weir Mitchell Lecture.—The Weir Mitchell Lecture will be delivered February 5, at 8:30, by Dr. Harvey Cushing of Harvard University, on "Clinical Types of Dyspituitarism," at the College of Physicians and Surgeons, Twenty-Second and Chestnut Streets.

Hospital's Income Increased.—On February 11, Judge Staake granted a petition to permit the Jeanes Hospital, the benefaction of the late Annie T. Jeanes, to receive a quarter of a million dollars annually as an income, and also granted permission for a property value of five million dollars, to be held by that institution.

Child Federation's Campaign.—A meeting was held at the Pennsylvania Hospital, February 10, of the Pennsylvania Association of Hospital Social Workers, and plans for increasing the efficiency of these workers connected with certain city hospitals were discussed. The following officers were elected for the ensuing year: president, Mrs. Blanche Jobes, Orthopedic Hospital; vice-president, Miss Mary E. Pollock, Jefferson Hospital; and secretary and treasurer, Miss Agnes Jacobs, Henry Phipps Institute.

Clergymen Join Housing Crusade.—After an inspection of the courts and alleys running back of South, Lombard, Bainbridge, Carpenter, Marshall and Fitzwater Streets, conducted by Bernard J. Newman, secretary of the Philadelphia Housing Commission, the ten ministers of various denominations, pledged their cooperation in the work of the commission, which desires that a comprehensive survey be made; that landlords and lessees be forced to purge the properties of uncleanliness and that stricter provisions be made for observation of the law.

VIRGINIA

Plead for Tax Exemption.—A committee of physicians appeared before the House Committee on Finance to ask that the statute requiring a license tax from physicians be repealed. The committee states that physicians are now taxed from $10 to $25 for licenses, the aggregate amounting to $44,000 a year, and that only four other states of the Union, North Carolina, Delaware, Louisiana, and Georgia, require the tax.

Health Specialists to Meet.—For the first time in its history the Virginia Public Health Association is to hold its meeting separately from the Medical Society of Virginia. The meeting will be held at Charlottesville, April 23 and 24, under the presidency of Dr. Moseby G. Perrow, Lynchburg. Addresses will be delivered by Dr. Harvey W. Wiley, Dr. Carl Alsberg, Dr. William C. Woodward, Washington, D. C., and Dr. Ennion G. Williams, Richmond State Health Commission.

Personal.—Dr. Albert P. Traynham, Richmond, has been appointed district hookworm inspector by the Rockefeller Sanitary Commission, to succeed Dr. Knox E. Miller, who has resigned to enter the U. S. P. H. S.——Dr. J. Thomson Booth, Ashland, has been appointed district hookworm inspector, vice Dr. G. L. Koelmer, who has resigned to enter practice in Salem. ——Dr. Hugh M. Taylor, Richmond, who was operated on in a hospital in Philadelphia for tic douloureux, is reported to be making good progress toward recovery.——Dr. Ernest C. Levy, chief health officer of Richmond, Ramon D. Garcin, and M. D. Hoge, Jr., have been appointed a committee to prepare the exhibit of the Richmond Board of Health in the Chamber of Commerce Building.

WISCONSIN

Tuberculosis Notes.—The forty-five inmates of the Blue Mound Sanatorium, Wauwautosa, were imperiled, February 10, by a fire which destroyed the institution, with a loss of $50,000. Fortunately no casualties occurred.——The State Board of Control has accepted recommendations for a tuberculosis camp on Tomahawk Lake.——Eau Claire County has a well-kept sanatorium, erected by the Eau Claire Anti-Tuberculosis Society. The institution is situated on the southern slope of Mt. Washington, west of the city, and accommodates twenty patients.

Personal.—Dr. and Mrs. Richard C. Buchanan, Green Bay, and Dr. and Mrs. James B. Lenfestey, De Pere, sailed for Europe, February 12.——Dr. Fay T. Clark, Waupun, has been appointed a member of the Wisconsin State Board of Medical Examiners, vice Dr. Milton, resigned.——Dr. M. J. White, assistant surgeon at the Soldiers' Home, Milwaukee, has resigned, and will take his former place on the medical staff of the Milwaukee County Hospital for the Insane, Wauwatosa.——Dr. Frank S. Wasielewski has been elected president, and Dr. Rudolf F. Teschan, secretary, of the board of trustees of the Johnston Emergency Hospital, Milwaukee. Dr. William F. Becker has been elected president and Dr. Oscar Lots, secretary, of the staff of the hospital.

GENERAL

Annual Meeting of the Federation of State Boards.—The annual meeting of the federation will be held at the Congress Hotel, Chicago, Wednesday, February 25, the day following the conference of the Council on Medical Education. The program includes, among others, the following addresses: "Uniform Curriculum for Medical Schools," by Dr. John L. Heffron, Dean of the College of Medicine of Syracuse University; "The United States Medical Services and Medical Education," by Lieut.-Col. J. R. Kean, Medical Corps, United States Army; "Standardizing Medical Education," by Dr. Harold C. Ernst, Professor of Bacteriology, Harvard University Medical School, Boston; "Instruction in Pharmacology and Therapeutics," by Dr. Samuel W. Lambert, Dean of Columbia University College of Physicians and Surgeons, New York City; Dr. Walter L. Bierring, President of the Iowa State Board of Health and Medical Examiners, Des Moines; Dr. Bernard Fantus, professor of pharmacology and therapeutics of the University of Illinois College of Medicine, Chicago. Other papers by prominent speakers will be given on medical practice acts, preliminary credentials, practical examinations and reciprocity.

Life Insurance Directors to Meet.—The fourth mid year meeting of the medical section of the American Life Convention will be held at French Lick, Ind., March 4 to 6, under the chairmanship of Dr. James H. Stowell, Chicago. The preliminary program, which has just appeared, shows an unusually interesting list of subjects for addresses and discussions.

Bequests and Donations.—The following bequests and donations have recently been announced:

Providence Hospital, St. Louis, $5,000 from the estate of Adolphus Busch.

Samaritan Hospital for the Aged, Society for the Relief of the Destitute Blind; New York Post-Graduate Medical College, each $1,000 by the will of Emily Chamberlain.

St. Vincent's Hospital, New York City, $3,000, by the will of Louisa Verret.

Vanderbilt Clinic, New York City, $2,700 donation by John A. Fordyce.

To build a hospital for the treatment of tuberculosis at Pendra Road, India, a donation of $5,000 by Mr. and Mrs. Durant Jones, Perry, Iowa.

Hospital Work of the Gould Alliance.—The annual report of the hospital service managers of the Missouri Pacific-Iron Mountain System shows an increase in the net surplus for the year of $12,163, of which $5,000 has been set aside for an emergency hospital at Argenta, Ark. During the year the Red Cross hospital car made an instruction tour of the entire system, giving lectures and demonstrations to the employees of the system. The hospital property of the system was turned over to the employees a year ago, and since that time additional hospital facilities have been secured at Busch and Illmo, Ill.; Nevada, Mo.; Concordia and Yates, La.; and Fort Smith and Newport, Ark.

FOREIGN

Discovery of Radium in the Caucasus.—Consul Snodgrass of Moscow reports that during geological investigations in the Caucasus recently radium and mesothorium have been discovered at the mineral springs near Sotobi and Sukhum

International Congress on Thalassotherapy.—This congress will convene at Cannes, on the Riviera, April 15, and will discuss all manner of subjects connected with the seashore, sunlight, sea-bathing, etc., as means of therapeusis. The main topic for discussion will be "Marine Heliotherapy," and a number of addresses are to made by leading authorities on the biologic aspect, dosage and therapeutic effects in various affections, especially pulmonary and surgical tuberculosis. The fee of $4 entitles one to the reports and transactions when published later. The treasurer is Dr. Gimbert, Villa des Myrtes, Cannes, France. The secretary is Dr. G. Baudouin, 21 Rue du Mont-Thabor, Paris, France.

Small-Pox in New Zealand.—A report from New Zealand under date of Jan. 7, 1914, describes an epidemic of small-pox in that country which affected two thousand people, chiefly Maori natives, who are very susceptible to the disease and who are not vaccinated. An epidemic prevailed at the same time in Australia, with 900 cases, but no deaths. The disease in the Maoris for the most part was mild. Many confluent cases were found though the percentage of deaths was small. On account of the character of these people and their wandering life accurate statistics could not be obtained. The disease was traced, it is said, to a case in a man from Utah, U. S. A., who had a pustular disease of a mild type while on the steamer going over.—(*Pub. Health Rep.*, Feb. 13, 1914.)

CANADA

Personals.—Dr. Edward A. Braithwaite, Edmonton, Alta., has been appointed to the Medical Council of Canada, in place of Dr. George A. Kennedy, Macleod, Alta., deceased.——Dr. Francis J. Shepherd, Montreal, has gone on a trip to Panama.——Dr. de Lotbiniere Howard, Montreal, is leaving for England and the Continent to spend the spring and summer in graduate work.——Dr. A. G. Morpy, Montreal, has sailed for the Mediterranean.

University News.—Sir William Macdonald, Montreal, has been elected chancellor of McGill University, in succession to the late Lord Strathcona. The new chancellor's donations to McGill total over $5,000,000, his special gift being the entire physics building completely furnished.——Dr. Mines, who has been loaned to the University of Toronto by the University of London, England, is doing special work in connection with physiological studies in the medical department.

New Officers.—Kent County (Ont.) Health Officers' Association: Dr. Charles H. Charteris, Chatham, president; Dr. Frederick L. Reid, Merlin, secretary.——Medical Association of the Counties of Stormont, Dundas, Glengarry, Prescott, and Russell, Ont., at Cornwall, February 12: President, Dr. Robert R. Reddick, Winchester; secretary-treasurer, Dr. William E. Crain, Crysler. The executive committee was instructed to frame a new tariff of fees for submission to the next meeting in Ottawa early in March.——Aesculapian Club, Toronto: President, Dr. Bruce L. Riordan; secretary, Dr. George Elliott, renominated.

Hospital News.—The Toronto Hebrew Hospital Association has been recently formed and collections are being made and donations solicited for a new Jewish hospital in Toronto.——The Coburg (Ontario) Hospital has received a check for $20,000 from the estate of a prominent citizen of Port Hope, Ont.——Mr. John C. Eaton, Toronto, has presented a modern motor ambulance to the Toronto General Hospital.——Strathroy, Ont., opened a fine new hospital February 9.——The Hamilton Health Association is asking the board of control to erect a new infirmary at a cost of $75,000.——Kamloops, B. C., is to grant $15,000 for a Royal Inland Hospital.——The King George Hospital for Infectious Diseases has been completed at Winnipeg, Man., at a cost of over $300,000.

LONDON LETTER

(From Our Regular Correspondent)

LONDON, Jan. 31, 1914.

Memorials to Lord Lister

In the presence of a distinguished company which included Dr. Herringham, chancellor of the University of London, Sir Rickman Godlee, president of the Royal College of Surgeons and nephew of Lord Lister, Mr. and Mrs. J. J. Lister and Sir David Ferrier, Lord Rayleigh unveiled a mural tablet in the central hall of King's College which bore the following inscription: "In affectionate and respectful memory of Joseph Baron Lister, F.R.C.S., O.M., Professor of Clinical Surgery in King's College from 1877-1892, and for many years consulting surgeon to the King's College Hospital, member of the Council, and Life Governor of the College, this tablet is erected. His name will be handed down to posterity as the founder of antiseptic surgery, one of the greatest discoveries in history, and a source of inestimable benefit to mankind." Addressing the assembly, Lord Rayleigh said that Lister was one of the great men of his generation. One hardly knew whether to be more impressed by the importance of his achievements or by the modesty with which he seemed to regard them. If any man could properly be satisfied with his life's work it was Lister; but he did not seem satisfied. At a dinner given to celebrate the institution of the Order of Merit (an order instituted by the late King Edward for eminence in science and literature), Lister spoke of his work wtih a touch of melancholy as having been done a long while ago and as if he had hoped to do yet more.

At Edinburgh, where Lister did so much of the work of initiating the antiseptic system, arrangements have been nearly completed for the establishment of a memorial to be known as the Lister Institute. It will be devoted mainly to research in bacteriology and pathology. The work will be performed in connection with the university, but the institute will be managed by an independent board consisting of representatives of the Royal Colleges of Physicians and Surgeons, the University and probably the Carnegie trustees. Certain facilities for teaching will also be provided.

Life in an Igloo

At the Royal Society of Medicine, Surgeon G. M. Levick, R.N., lectured to a crowded audience on "The Experiences of Captain Scott's Northern Party from a Medical Point of View." He described how he and five comrades spent a winter in an ice-cave, or igloo, of their own digging, on the shores of Robinson's Bay, the ship which was to have taken them north having become frozen in. The party hit on the idea of burrowing below ground because, with a perpetual hurricane blowing, life above ground was intolerable. The cave undoubtedly saved their lives. It was hewn out of the clear blue ice and took a long time to make, but it was an adequate protection and less uncomfortable and unhealthy than might be supposed. The members of the party had only six weeks' provisions and realized that they should have to live on seal-meat during the greater part of the seven months in front of them. They were lucky in getting a number of seals, which are scarce during the winter, and also about ninety old penguins, which were molting, and had consequently delayed their migration. The penguins had not an ounce of fat on them, but they afforded a pleasant variety of diet. The party lived exclusively on seal-meat for a while, until they managed to get used to blubber. The blubber helped them to forget their great craving for sugary foods, but every now and then they revolted against it and could not touch it. They had great difficulty in cutting the seal-meat, as it was as hard as iron. They broke one of their axes on it and eventually had to fall back on a geologist's chisel and hammer. They used an old biscuit-tin as a stove and dripped blubber into it. It took the cook the whole day to prepare the evening meal. They scarcely dared to go out at all; every time they did go out they got frost-bitten. Ventilation troubled them a good deal until they drilled a chimney. One morning, after a blizzard, they found that none of their lamps would burn. They tried to light a "Primus" stove, and then a match, but these went out immediately. Apparently there was almost no oxygen left in the air. As soon as they dug a hole through the drifted snow the lamps flamed up. The curious thing was that the members of the party experienced no discomfort. In a warmer climate they would probably have died. Another remarkable fact was that none of them suffered from scurvy. The fact that they were all comparatively fit at the end of their imprisonment was a wonderful testimony of the value of a flesh diet. Their first meal after their escape was simply enormous. They ate fourteen biscuits and 2 pounds of pemmican and oatmeal each, besides lard, butter and chocolates. One of the party could not lift his legs to get into bed. Yet none of the members of the party had indigestion.

The Census of the Insane

The eleventh volume of the census of England and Wales for 1911, which deals with infirmities, has just been issued. The total number of the insane in the country is 161,993; 76,243 males and 85,750 females, representing a proportion of 4,491 per million. This is a considerable increase over the census of 1901, when the proportion was 4,078 per million, but the increase in the number of insane is no proof of the growth of insanity in the community. There is really not

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sufficient evidence for a correct judgment to be formed. The care to segregate persons suffering from milder forms of insanity is probably the reason for the apparently excessive increase in the numbers during the last forty years. Of the 161,993 persons who were returned as suffering from mental infirmity, 106,660 were returned as lunatic, 25,405 as imbecile, and 29,928 as feeble-minded. In 1901, 83,772 were returned as lunatic, and 48,882 as imbecile or feeble-minded. Thus there is an increase of 22.1 per cent. in the insane taken as a whole, of 27.3 per cent. in the lunatic, and of 13.2 per cent. in the imbecile or feeble-minded. The largest percentage increase in the insanity-rate occurs in the case of children under 15. The total increase is 30.8 per cent., the rate for lunatics being 42.3, and the rate for imbeciles or feeble-minded being 30.3.

The Census of the Deaf and Blind

The volume of the census of England and Wales of 1911 which deals with infirmities has just been issued. For the first time an attempt has been made to obtain information regarding the deaf other than deaf mutes. In view of the worthlessness of returns of the partially deaf, it was decided to reduce the inquiry to its lowest terms and to ask only whether there was total deafness. A similar difficulty in regard to blindness was dealt with in the same way. In the case of the blind it is probable that a number of persons who possess some degree of sight have been returned as totally blind. The reason for this is that a defect of vision which forbids the ordinary means of earning a livelihood has been considered as important as total blindness. The numbers returned totally blind were 26,336, of whom 13,257 were males and 13,079 females—that is, one person out of every 1,370 is blind, one out of 1,316 males and one out of 1,424 females. These numbers compare favorably with the last census, taken in 1901, when there were 25,317 blind people, or one out of 1,285. There has, indeed, been a steady improvement at each census since 1851, when one person out of every 979 was returned as blind. The totally deaf number 26,649, of whom 10,640 are males and 16,009 females. In addition there are 13,427 who also are dumb, and 1,695 who are stated to be dumb but not stated to be deaf. Of the two latter groups 8,167 are males and 6,955 females. The greatest proportion of the deaf and dumb, both male and female, are aged from 55 to 65 years. The proportion for all ages is lower than at any census since 1851, and the improvement, as might be expected from the trend of modern educational methods, is much more marked in early than in later life. The largest number of deaf and dumb males are employed as boot and shoe makers, the smallest as bricklayers' laborers. Of the females, dressmakers form the greatest proportion.

BERLIN LETTER

(From Our Regular Correspondent)

BERLIN, Jan. 31, 1914.

Personal

The well-known pediatrician, Prof. A. Baginsky, has been chosen an honorary member of the Verein für innere Medizin und Kinderheilkunde.

January 30, Professor Neumann of Königsberg, the distinguished pathologic anatomist, celebrated his eightieth birthday.

January 27, Professor Grabower of Berlin, known particularly on account of his work on the innervation of the larynx, died at the age of 64.

Privy Councillor Volmer, for many years the director of the department of internal medicine of the Catholic hospital in Berlin, died January 29.

Kaiser Wilhelm Institute for the Physiology of Work

The erection of an institute originated by Professor Rubner of Berlin, to be devoted to the physiology of work, has been begun under the auspices of the Kaiser Wilhelm Society for the Advancement of Science. The building will be placed next to the University Institute for Physiology on Invaliden-Platz. Professor Rubner has been appointed director of the institution. He will have three assistants, one for physiologic chemistry and metabolic work, one for experimental physiology and psychology, and one for statistical and economic studies.

The purpose of the institution is to obtain exact data regarding human effort of a physical and intellectual nature, both in general and with reference to the special conditions in childhood, youth and old age, and in various constitutions and races. Studies are to be inaugurated to determine the influence of the air temperature, radiant heat, and the moisture and the movement of the air on work. With reference to nutrition, a study will be made of the distribution of vegetable and animal diets, and the peculiarities of nutrition in various districts of the country, the relations of diet in the country and the city, the nutrition of families with few and those with many children. The investigation of the hygiene of the trades will constitute an important aim and it is hoped in this way to lay the foundation for an extension of the principles underlying prophylactic measures against the various influences unfavorable to health.

From this outline it may be seen how high an aim the new institution is to achieve. The extensive experience of the director, Professor Rubner, justifies the expectation that in a short time a series of important facts will be discovered in the institute.

Rise of Life Expectancy in Prussia

Official statistics recently published indicate that the average length of life in Prussia is steadily rising. This satisfactory condition must be regarded as the result of improvement in living conditions of the population, the extraordinary advance in sanitation, the care of the drinking water, attention to drainage, and finally, improvements in the treatment of the sick. While the average life expectancy of infants in the period from 1867 to 1876 was 33.05 years for boys and 35.74 for girls, it had risen for the period from 1906 to 1910 to 46.42 and 50.03, respectively. At the twentieth year of life, the increase in the average length of life is 5.18 and 5.75 years, respectively, while at fifty it is 2.33 and 2.59.

German Roman Catholic Bishops on Sex Education

The question whether children shall be instructed in sex hygiene, forms a matter of dispute between those who see in such instruction an occasion of injury to the morals of the young and those who hold it very important to impart biologic facts, even to children of school age. The problem is of interest to physicians, inasmuch as the latter party demand that the explanation of these matters to children shall be made a part of the duties of the school physician. Hence it is of interest to learn the conclusions which the Roman Catholic bishops of Germany reached on this subject at their conference held in 1913. The assumption that in accordance with the pronounced conservative tendency, these clergymen would be opposed to any form of instruction in sexual matters is not justified by their resolutions. The resolutions are as follows:

In general, the instruction of youth in sexual matters should be treated with the greatest caution and reserve. In individual cases, where it is necessary, it is the function of the parents, the religious teacher, the father confessor, or the teacher. Sexual instruction in common by lectures to groups of pupils or graduates is to be condemned. The young should be trained early in modesty and if there is need of instruction in sex matters after leaving school, it should be imparted to girls by the mother, to boys by the mother or the father, or in both cases by the father confessor with the greatest caution, teaching and warning in private. Gymnastic institutions or exhibitions for boys and girls together should never be approved. Also all public exhibitions or gymnastics for girls or women, and still more, public swimming matches and the swimming of boys and girls together should be emphatically condemned. Physical exercise for girls in a manner suited to the capacity of the female body and to the tender feeling of childhood and youth is not to be condemned. But to determine the extent of this (and in individual cases, the limited admission of spectators) is the business of the educator with religious sensibility and not exclusively of a technical expert. It would be much to be regretted if the attention to physical exercise on the part of the female sex should be carried to such an extent as to lead to inattention to the heart life, an underestimate of the spiritual and emotional training, a weakening of womanly modesty and lessening of the love for quiet domestic activities. It is a matter of most serious complaint that feminine dress both for children and adults in wide circles at the present time has become shameless, and the conference would gladly hail a determination on the part of the Catholic Women's League to wage a bold, decided and persevering warfare along the whole line against that disgraceful perversity. It would be much to be deplored if parents should be so short-sighted as to disregard this earnest appeal from their religious leaders.

From a medical standpoint, one will be able to agree with some important points in these resolutions, although not with all

Deaths

Roswell Park, M.D., eminent as a surgeon, scientist and teacher, died suddenly at his home in Buffalo, February 15, from heart disease, from which he had suffered for several months.

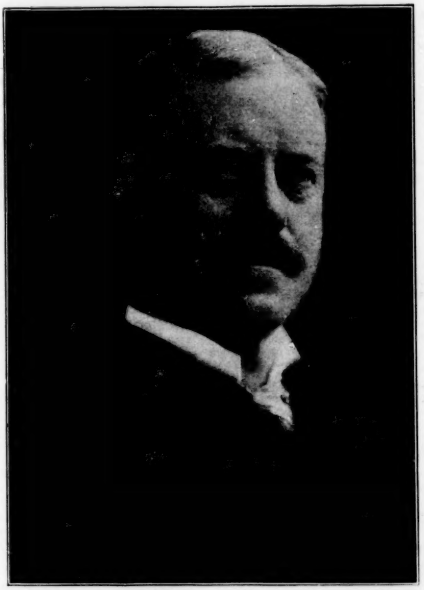
He was born in Pomfret, Conn., May 4, 1852, the son of Rev. Roswell and Mary Brewster Baldwin Park. He was graduated from Racine (Wis.) College with the degree of A.B. in 1872, receiving his A.M. degree three years later. His medical course was taken at Northwestern University Medical School, from which he graduated in the class of 1876.

He began his work as a teacher in the year after his graduation, when he was made demonstrator of anatomy in the Women's Medical College of Chicago. After two years he became adjunct professor of anatomy in his alma mater, resigning this position in 1882 to become a lecturer on surgery in Rush Medical College. A year later he was appointed professor of surgery in the medical department of the University of Buffalo, and held this position until the time of his death.

He was a prolific contributor to the literature of surgery and pathology. He was the author of a Text-Book of American Surgery, published in 1896, of an Epitome of the History of Medicine, which appeared a year later, and of the Principles and Practice of Modern Surgery, which was brought out in 1907. In 1891, he delivered the Mütter Lectures on Surgical Pathology.

Dr. Park served his state as major and surgeon of the Fourth Brigade, N. G., S. N. Y. He was consulting surgeon at Fort Porter, Buffalo, under special contract with the Surgeon-General of the Army in 1899, and was one of the first to be commissioned as a first lieutenant, Medical Reserve Corps, U. S. Army, on the formation of the corps in 1907.

Dr. Park was deservedly the recipient of many honors. Lake Forest University conferred on him the honorary degree of M.D. in 1892; Harvard University, that of A.M., in 1895; and Yale University, that of LL.D., in 1902. He was appointed director of the New York State Cancer Laboratory in 1901. Of late years he had taken a great interest in the research work regarding cancer, and his opinion was regarded as authoritative. He was an anatomist of unusual erudition; a pathologist of the highest rank; a surgeon of great clinical skill and rare judgment; a teacher who possessed the somewhat rare faculty of making his students remember what he taught them. While a man of pronounced opinions, he was greatly beloved by his fellow practitioners, to whom he endeared himself by unfailing courtesy, and by giving without stint of his stores of knowledge.



ROSWELL PARK, 1852-1914

Nathan S. Marshall, M.D. Jefferson Medical College, 1858; formerly of Illinois and secretary of the Centennial Medical Society, Olney, Ill.; one of the survivors of Commodore Peary's expedition to Japan in 1852; died at the home of his daughter in Knoxville, Tenn., February 7, aged 81.

Henry Laird Todd, M.D. University of Maryland, Baltimore, 1851; county commissioner of Wicomico County in 1867, and county treasurer in 1901; died at his home in Salisbury, January 23, from acute gastritis, aged 83.

Margaret A. Osborn (license, Indiana, 1897); for fifty-three years a practitioner of medicine of South Bend; died at her home, January 29, aged 86.

George Lloyd Magruder, M.D. Georgetown University, Washington, D. C., 1870; emeritus professor of materia medica and therapeutics and formerly dean of the faculty of his alma mater; a Fellow of the American Medical Association; one of the originators of the Central Dispensary and Emergency Hospital, Washington; a member of the consulting board of Providence Hospital, and of the board of directors of the Government Hospital for the Insane; prominently identified with the campaign for pasteurized milk in Washington, and other civic improvements; died at his home, January 28, from heart disease, aged 65.

Edward Payson Fowler, M.D. New York Medical College, New York City, 1855; a Fellow of the American Medical Association and New York Academy of Medicine; formerly president of the New York Medico-Chirurgical Society; author of several books on neurologic subjects; at one time visiting physician at Ward's Island; died at his home in Pelham Manor, January 29, from pneumonia, aged 79.

Warren S. Williams, M.D. Western Reserve University, Cleveland, Ohio, 1884; a Fellow of the American Medical Association, and the third of his family in direct line to practice medicine in Kendallville, Ind.; died at his home, January 25, aged 52.

William Wistar Wilson, M.D. Medical College of the State of South Carolina, Charleston, 1879; a member of the South Carolina Medical Association; died at his home in Williamston, January 29, aged 63.

John H. Wood, M.D. Tulane University, New Orleans, 1891; formerly a Fellow of the American Medical Association; died at his home in Hubbard, Texas, January 21, from cerebral hemorrhage, aged 47.

Charles E. Froelich, M.D. University of Copenhagen, Denmark, 1870; a member of the Connecticut State Medical Society; died at his home in Hartford, January 31, from acute gastritis, aged 68.

William Pearson, M.D. Vanderbilt University, Nashville, Tenn., 1888; of Joshua, Texas; died in a sanitarium in Fort Worth, Texas, January 28, from cerebral hemorrhage, aged 56.

William Clark Brittain, M.D. Eclectic Medical Institute, Cincinnati, 1873; a Fellow of the American Medical Association; died at his home in Cochranton, Pa., January 30; aged 64.

Caroline Helen Van Horne, M.D. Women's Medical College of Pennsylvania, Philadelphia, 1894; a member of the medical staff of the Englewood (N. J.) Hospital, and physician to the Day Nursery; a member of the Medical Society of the State of Pennsylvania; died at her home in Englewood, February 3, from heart disease, aged 51.

George Fleet Dudley, M.D. Washington University, St. Louis, 1863; one of the founders and first president of the St. Louis Medical Society, and first health commissioner of St. Louis; for two terms coroner of St. Louis County; a surgeon in the Confederate service during the Civil War; died at his home February 2, aged 79.

Ray Vaughan Pierce, M.D. Eclectic Medical Institute, Cincinnati, 1865; of Buffalo, N. Y.; of Pierce Golden Medical Discovery and other patent-medicine fame; died at his winter home on St. Vincent's Island, Fla., February 3, from cerebral hemorrhage, aged 64.

Eugene D. Collett, M.D. Sioux City (Iowa) College of Medicine, 1909; formerly of Mangum, Okla., died in North Platte, Neb., Dec. 29, 1913.

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William Kelly Simpson, M.D. College of Physicians and Surgeons, 1880; a Fellow of the American Medical Association, and New York Academy of Medicine; a member of the American Laryngological Society; for nine years professor of laryngology in his alma mater; consulting laryngologist to the Seton and St. John's hospitals, Yonkers, and the Somerset (N. J.) Hospital; laryngologist to the Vanderbilt Clinic, and consulting otologist to the Presbyterian Hospital, New York City; died at his home in New York City, February 6, from cerebral hemorrhage, aged 58.

Daniel C. Logue, M.D. New York University, New York City, 1856; acting assistant surgeon, U. S. N., during the Civil War, and surgeon of the *Monitor* during the historic fight with the *Merrimac*; after the war a practitioner of Brooklyn until 1900, when he retired from practice and moved to Bellmore, L. I.; died at his home, February 4, aged 81.

James Harvie Dew, M.D. University of Virginia, Charlottesville, 1867; a Fellow of the American Medical Association and the New York Academy of Medicine; a Confederate veteran; for nine years professor of anatomy, physiology and hygiene in the New York high schools; died at his home in New York City, January 26, aged 70.

George Douglass Dickerson, M.D. University of Louisville, 1879; a member of the Arkansas Medical Society; for two terms surveyor of Faulkner County; for two terms alderman of Conway; and for six terms president of the local school board; died at his home in Conway, January 23, from heart disease, aged 59.

Thomas Jefferson Shoemaker, M.D. Kentucky School of Medicine, Louisville, 1865; a Fellow of the American Medical Association, and one of the founders of the Ohio Valley Medical Association; died at his home in Morganfield, Ky., January 29, from organic heart disease, aged 76.

Mark T. Clay, M.D. Indiana Eclectic Medical College, Indianapolis, 1886; of Little Rock, Ark.; died suddenly in his buggy, January 15, from heart disease, aged 58.

James O. R. Carley, M.D. Hahnemann Medical College, Chicago, 1885; a member of the Kansas Medical Society; died at his home in Winchester, January 12.

Isaac S. Becker, M.D. Albany (N. Y.) Medical College, 1856; health officer of Altamont, N. Y.; died at his home at that place, January 13, aged 84.

Henry E. Zielly, M.D. Geneva (N. Y.) Medical College, 1849; formerly of Chilton, Wis.; died at his home in Spokane, Wash., Nov. 18, 1913, aged 87.

David T. Collier (license, Missouri, 1884); for more than half a century a practitioner; died at his home in Licking, January 4, aged 77.

Matthew Mark Kannon, M.D. Bishop's College, Montreal, 1879; of Los Angeles; died in the Sisters' Hospital in that city, January 10.

John D. Pulliam, M.D. Jefferson Medical College, 1861; of Plentiful, Va.; died in Richmond, January 15, from pneumonia, aged 76.

W. H. Franklow, M.D. Memphis Hospital Medical College, 1892; died at his home in Shiro, Tex., January 9, from pneumonia, aged 42.

Comfort E. Rutherford, M.D. Eclectic Medical Institute, Cincinnati, 1886; died at his home in Peru, Ind., Nov. 17, 1912, aged 82.

Harvey W. Swales, M.D. Medical College of Ohio, Cincinnati, 1891; died at his home in Logan, Ind., January 6, aged 43.

Marriages

WILLIAM H. ROBERTS, M.D., Terre Haute, Ind., to Mrs. Louisa V. Zink of West Terre Haute, February 2.

PETER HUBERT CREMER, M.D., Cannon Falls, Minn., to Miss Delia Noel of Mazeppa, Minn., January 29.

FRED SELBY PERRINGS, M.D., to Miss Alice Biebinger, both of St. Louis, at Clayton, Ill., January 20.

EDWARD FREEMAN WALSH, M.D., to Mrs. Abbie W. Follette, both of St. Paul, Minn., February 4.

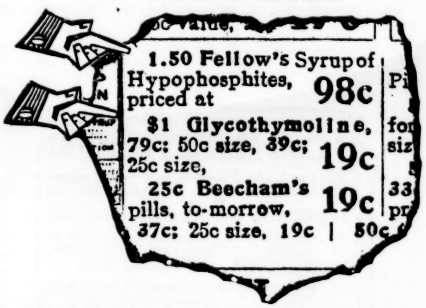
CLYDE M. ZINK, M.D., to Miss Sarah E. West, both of Louisville, at Indianapolis, February 3.

W. B. CARR, JR., M.D. to Mrs. Tevis M. Elliott, both of Washington, D. C., February 2.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

WHEN IS A PATENT MEDICINE?


1.50 Fellow's Syrup of Hypophosphites, priced at 98c
$1 Glycothymoline, 79c; 50c size, 39c; 25c size, 19c
25c Beecham's pills, to-morrow, 19c
37c; 25c size, 19c | 50c

Some physicians and especially some medical journals seem to have difficulty in correctly classifying certain proprietary medicines. The drug departments of department stores find the problem a simple one. The reproductions shown above and below are of portions of a full-page advertisement in Chicago newspapers of Feb. 8, 1914. Fellows' Syrup of Hypophosphites, Glycothymoline and Sal Hepatica look perfectly at home with Peruna, Circus Liniment and Beecham's Pills.

Sal Hepatica Liver Salts, $1 value, 69c
50c Circus Liniment, 33c; 25c size, 17c
$1 Father John's Medicine, 69c; 50c size, 39c
$1 Peruna, special at 69c.
$1 Wampole's Wine Cod Liver Oil, 69c
50c California Syrup of Figs, 33c.

SOME MORE FRAUDULENT OBESITY CURES*

Lucile Kimball

Lucile Kimball of Chicago comes to the obese with the message, "I can make your fat vanish by the gallon." Her claims are the stock claims of the "obesity cure" fakers of the "drugless" type. It is unnecessary, Lucile tells the fat-burdened, to change their method of living. All that is needed to remove their superfluous flesh is to take the Lucile Kimball home obesity treatment!

". . . my home treatment is not exercise or diet . . . eat any kind of meat, vegetables, salads, pastry, fish, fowl, nuts, candy that you want—when you want it. Drink what you want—when you want it. I don't interfere with your food or drink. No bending over, rolling, playing golf, horseback riding or doing exercises of any kind. Sit in your chair at home or in your chair at your office—and the fat will vanish from you by the pint, quart, and gallon. It goes away rapidly. It melts from your cells."

* These, with two other items to be published next week, will be incorporated in the pamphlet "Obesity Cure Fakes," price 10 cents.

In her advertisements, Lucile pleads with her prospective victims not to send any money.

"Don't send a penny. I will return it."

Like other frauds of this type, this "treatment" is entirely different from every other "treatment": It is essentially a "home remedy." "I am a home body," says Mrs. Kimball, "opposed to the work of charlatans"—doubtless on the ground that competition is undesirable.

To those who answer her advertisement Lucile Kimball sends a complete set of follow-up letters. The first letter describes the "cure's" simplicity.

"It does not attack living tissues. It does not tear away muscle and healthy cells. It simply converts your fat into an emulsion and passes it through your liver, into your colon and out with your waste."

I Can Make Your Fat Vanish by the Gallon!
I CONQUERED OBESITY PAST MIDDLE-AGE
I Ate Everything I Liked—Went Through No Exercise—Wore No Special Clothing—Took No Weakening Baths!
I Explain My Simple, Speedy Home Treatment to You—FREE!
Spend Just One Penny!
Lucile Kimball, Suite 104, 1327 Michigan Blvd. Chicago, Illinois.

Truly a marvelous physiologic feat. "And think of having to pay only Ten Dollars for this full and complete obesity treatment."

In the second letter Lucile rehashes that hoary anecdote about the Londoner who tried to sell sovereigns at a shilling apiece, but was unsuccessful because the public suspected a trick. Says Lucile:

"I am offering you the equivalent of a gold sovereign for a cheap, inexpensive little shilling. Don't be too wise to see the bargain."

Therefore, "send your ten dollars . . . hurry it along . . . do it while the spirit is on you." Letter three is of the "scare" type; an attempt to frighten the obese into taking the treatment. Moreover, the price is reduced:

"Now I am going to . . . give you an opportunity to secure this full treatment of mine, fully guaranteed, for only seven dollars. . . ."

Letter four brings the price down to $5; letter five to $3.25; letter six to $1.79—providing the money is sent within three days—letter seven extends the time limit of the $1.79 offer.

"This is my final price—just $1.79, prepaid, I will never make you another offer. This treatment cannot be purchased for a penny less."

In spite of this, letter eight comes, offering "this regular ten-dollar treatment for only one dollar."

This is the last of the follow-up letters. If the victim fails to send the dollar, Lucile Kimball charges the account up to profit and loss. Here, in brief, are the offers made to those who answer the Lucile Kimball advertisements:

Letter 1: Only $10 for "lifetime's complete mastery over fat."

Letter 2: Send $8.0 "while the spirit is on you."

Letter 3: Only $7. "Easily worth a dozen times this price."

Letter 4: "Send only $5 by express or post-office money order. Send your order to-day, my friend."

Letter 5: $3.25. "If I could make the price any lower . . . I should be delighted to do so."

Letter 6: $1.79. "Must be done within three days from the time you receive this letter."

Letter 7: $1.79. "Have decided to extend my offer." "I will never make you another one."

Letter 8: Only $1. "Hasten your order."

And what is the Lucile Kimball home obesity treatment? Dr. Wiley asked this question, and to answer it had the "treatment" analyzed. He gave the result of the examination in an article by Miss A. L. Pierce and himself in *Good Housekeeping* for January, 1914. Here it is, in brief:

Pink Pills: Reported to consist principally of red pepper, menthol and bitters, probably gentian or quassia.

Brown Tablets: These the chemists declared to be an old-fashioned cathartic pill of the aloin type.

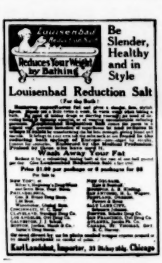
Powder: This consisted, according to the chemists, of a mixture of soap, Epsom salt and washing soda.

Surely much ado about nothing! We leave it to Lucile Kimball to explain the following discrepancies between facts and claims: "No internal . . . dosing"; "No internal medicine." How about the purgative pills and the bitter tonic? "You don't have to take . . . any special kind of bath": What about the strong alkaline bath powder consisting of soap, washing soda and Epsom salt?

Summed up, the Lucile Kimball Home Obesity Treatment is palpably fraudulent and utterly worthless.

Louisenbad Reduction Salt

Louisenbad Reduction Salt is sold by one Karl Landshut, Chicago. It is a white powder and comes in tin boxes containing 14 ounces and costs $1 a box. According to the label, Louisenbad Reduction Salt is:


Louisenbad Reduction Salt
Reduces Your Weight by Bathing
Be Slender, Healthy and in Style
Louisenbad Reduction Salt
Wash Away Your Fat
Karl Landshut, Importer, 31 Dolton Bldg. Chicago

"An obesity remedy for the reduction of superfluous fat without the use of drugs, dieting or exercise."

The stuff is supposed to be put in the bathing-water and baths are to be taken "twice a week or oftener." A tablespoonful of the "salt" to a bathtubful of water is the amount prescribed. This artistic touch is added to the label:

"Should the baths reduce faster than three lbs. per week, they should not be used more than twice a week."

As a supplementary "treatment" it is urged that the unsweetened juice of half a lemon should be taken on the same days that the baths are taken. The prospective purchaser is asked to believe that Louisenbad Reduction Salt has these powers:

"Removes superfluous fat and gives a slender form and stylish figure."

"Enters the pores in a natural way, prevents formation of superfluous fat and reduces it where it exists by transforming the fat into strength-giving blood and muscle."

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The preparation was examined by the Association's chemists who reported, in part, as follows:

"From the analysis (made in the Association's laboratory) it appears that Louisenbad Reduction Salt has essentially the following composition:

Sodium sulphate, anhydrous (dried Glauber salt)....72.4 per cent.
Sodium chlorid (common salt) .....11.2 per cent.
Potassium chlorid .....16.4 per cent.

"The approximate cost of 14 ounces of such a mixture would be about 10 cents."

It is hardly necessary to say that taking a bath in a tubful of water in which a tablespoonful of a mixture of Glauber salt, table salt and potassium chlorid has been dissolved would have no other effect than that obtained from bathing in the same amount of water without the mixture. Two such baths a week would produce no appreciable effect in the diminution of weight of any individual who was not extremely dirty.

Correspondence

An Endowment Fund

To the Editor:—In contemplating the great humanitarian work which the Association and THE JOURNAL are doing—the propaganda for reform, the publication of Nostrums and Quackery, the work of the Council on Medical Education, the educational campaign against the social evil—I am impressed of late with this one thought: If the Association, with its limited resources, could accomplish so much in so short a time, what might we expect of it if its resources were large and secure! What, if we had a great endowment fund, might we expect from the coming years! What vast possibilities lie dormant for the lack of the one needful thing—money! How many people of great wealth, big-hearted, big-souled—"sun crowned, who live above the fog in public duty and in private thinking"—who would gladly bequeath liberal sums to a fund which could be used for such great and lofty purposes! Surely there is no greater service to mankind than that which this Association stands ready and pledged to perform if it had the wherewithal to do it. Why can we not establish such a fund and endeavor in every way available to let it be known, and for what purpose it exists? Why would it not be right and proper to seek out philanthropy and lay bare the great human needs that should be ministered to, and the great human purposes and ideals which this Association has in offering such ministry? I know not but this may be already a fixed policy with the Association. Already others may have had their own dreams and formulated them into fixed plans. If so, I am an intruder. If not, does the suggestion seem to merit some consideration?

S. A. FOOTE, M.D., Bay City, Tex.

Blood Transfusion in 1492?

To the Editor:—Under this title Dr. J. L. Joughin (THE JOURNAL, Feb. 14, 1914, p. 554) quotes from Villari's "Life of Savonarola" a passage purporting to give an "accurate record" of the first transfusion. The following passage from A. H. Mathew's "Life and Times of Rodrigo Borgia" (1912, Brentano's, p. 66) throws a somewhat different light on the same incidents:

"On the evening of July 25, 1492, the good-natured and incompetent Pope Innocent VIII passed away. It is related that, during his last illness, the operation for transfusion of blood was unsuccessfully performed. This, however, is an error arising from the forgetfulness of two important facts: (1) that the idea of this operation could not occur to any one to whom the circulation of the blood was unknown; (2) that the phenomenon of the circulation of the blood was not discovered until the seventeenth century. Raynaldus and Infessura say that a certain Jewish physician undertook to restore the Pope's health; for this purpose he drew all the blood out of three young boys, who immediately died. With their blood he prepared a draught which, in spite of the doctor's protestations, failed to improve the sick pontiff's condition. The saving virtue of drinking human blood was no new idea."

Mathew then quotes from Tertullian's "Apologeticus" a passage referring to the practice of drinking, as a cure for epilepsy, the fresh blood of criminals killed in the arena.

C. R., Chicago.

"The Doctor Can Wait"

To the Editor:—In "A Poor Man's Bank," by Walter Prichard Eaton, *The American Magazine* for February, one reads the following:

To sit at a board meeting of the Atlanta Loan and Savings Company is an experience worth having. The secretary reads the new applications. John Doe applies for a loan of $100. He is a clerk, with a salary of $60 a month. His endorsers are a fellow clerk and his employer, or perhaps three or four of his fellow clerks. He has a wife and baby. The report on his character is good, and his endorsers are sound.

"What does he want the money for?" somebody asks.

The secretary reads from the application: "Baby's been sick, operation cost $50. Borrowed from shark. Owes doctor $50, drugs $12, grocer $9, rent $12, shark $47. Wants to pay as much as he can. Shark has been threatening him."

"Who's the doctor?"

"Dr. Smith."

"I know him," says one of the directors. "He'll wait till we can get the man clear of his other debts. I'll see Smith to-night. That would reduce the indebtedness to $80. Lend him $80."

"Hang it up! On to the next!" cries Director Sawtelle. The vote is unanimous.

Picturing the bluff, confident delivery of this director, one cannot help but be amused. The amusement, however, changes to something very like resentment on reflecting how his view is accepted generally. The director and John Doe will as a matter of course agree that Dr. Smith's services were the most necessary and highly trained. Yet the doctor is to wait. Are either of these men able to reveal the supernatural source from which Dr. Smith is to derive his support?

Changing this lay point of view is a duty incumbent on him who implanted it—the physician.

LAWRENCE SCHLENKER, M.D., St. Louis.

The Comparison Ocular

To the Editor:—In the article by Dr. D. G. Healy, on "A Comparison Ocular" (THE JOURNAL, Nov. 29, 1913, p. 1958), stress is laid on the date since which it has been used (May, 1912), and it is stated that the instrument has been constructed by Messrs. Bausch & Lomb, from the idea suggested by Dr. Healy. Furthermore, it is stated that it antedates by six months the comparison microscope devised by Dr. Thoerner in Germany. The Comparison Ocular described, is not new but is over twenty years old. It was made by C. Reichert, Vienna, on the suggestion of Dr. Henri von Heurck. It is fully described on pages 105 and 106 in his book, "The Microscope, its Construction and Management." The English edition was published in 1893 by Crosby Zockwood & Son, London, England, and the D. Van Nostrand Company, New York.

A. TRAEGER, New York.
American representative, ERNST LEITZ.

[The foregoing letter was referred to Dr. Healy who writes: I am glad to have this information regarding the origin of the comparison ocular. When I suggested the comparison ocular to Messrs. Bausch & Lomb, I was not aware that such an ocular had been made, and the idea as such was original with me.—ED.]

Radium Prices in Germany.—Consul Milo A. Jewett of Kehl notes that the Strassburg Hospital and University some time ago bought 200 mg. of radium at $76 per milligram, and has bought 100 mg. more, which will cost at present prices $98 per milligram (or at the rate of $3,000,000 an ounce, troy weight).—*Daily Consular and Trade Reports.*

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ASTHMA FROM ANAPHYLAXIS—HAY-FEVER SYMPTOMS FROM HORSE-SERUM

To the Editor:—In THE JOURNAL, Jan. 31, 1914, in Therapeutics, under the heading "Anaphylaxis," there appear some statements such as those in the following quotation:

"When antitoxin is indicated in diphtheria, or horse-serum in hemorrhage, one should be sure to inquire whether or not the patient is an asthmatic or a sufferer from hay-fever, and especially if horse emanations cause either of these conditions. If such is the case, all horse-serums are positively contra-indicated."

Please give me (1) the scientific proof (or sufficient scientific indication) that asthma and hay-fever are caused by anaphylaxis, and (2) the scientific proof (or sufficient scientific indication) that inhaled dust or emanations from horses can cause anaphylaxis (and thus cause asthma and hay-fever).

GEORGE E. BARNES, M.D., Herkimer, N. Y.

ANSWER.—1. Asthmatic symptoms are prominent in typical anaphylactic shock. In guinea-pigs contraction of the bronchioles is one of the characteristic phenomena of anaphylactic shock. In severe forms of serum disease the attack may begin with acute asthmatic symptoms, as in De Besche's case. In persons with "idiosyncrasies" with respect to various food substances such as eggs, strawberries, etc., acute asthmatic attacks associated with urticarial and other skin reactions may occur after the ingestion of the offending substances. Cases of so-called egg-asthma are described by Landmann, Moro, Koessler and others. In view of this state of facts it seems not unreasonable to believe that in susceptible, that is, sensitive persons, various bacterial proteins from foci of chronic infection also may cause asthmatic symptoms. In some cases it is supposed, too, that minute particles of foreign proteins suspended in the air may cause asthmatic reactions when inhaled by sensitive persons. This would seem to be illustrated in the case of persons who have asthma when they come into close contact with horses, go into tunnels, etc. In guinea-pigs primary sensitization, as well as the explosive anaphylactic shock, has been produced by spraying foreign serum into the trachea and lungs. For these and other reasons there would seem to be "sufficient scientific indication" to conclude that asthmatic attacks are the result of the direct action on the bronchioles and respiratory tract of substances developed in the course of parenteral protein digestion and hence of similar pathogenesis as "enteritis anaphylactica" and "conjunctivitis anaphylactica."

That hay-fever or hay-asthma is the expression of an anaphylactic reaction to certain pollens is indicated, first, by the fact that animals may be rendered anaphylactic with respect to pollen proteins, and secondly, by the fact that typical acute hay-fever with characteristic local reactions on the part of the nasal and other mucous membranes, as well as itching and urticarial eruptions, has been produced experimentally by the injection of the proper pollen into a hay-fever victim (Dunbar's experiment), the reaction occurring within a few minutes, whereas in a person not subject to hay-fever, such injection had no effect. The best explanation we have of this "idiosyncrasy" is that the hay-fever victim for some reason had ferments in his blood that split the pollen proteins so that toxic substances were produced, which caused the symptoms of hay-fever by their action on the respiratory mucous membranes, as well as cutaneous reactions like those familiarly seen in serum disease.

2. While we have no direct proof that dust and emanations from horses can cause the primary sensitization necessary in order to produce anaphylaxis experimentally, there are recorded quite a number of cases of abnormal sensitiveness to such emanations, generally taking the form of asthmatic manifestations and symptoms like those of typical hay-fever, and it is in just such cases that the injection of horse-serum has been followed by most violent reactions. In such cases sensitization must have been caused in some way, but just exactly how this occurred, whether from inhalation of emanation or otherwise, is not known. It is of course not quite correct to say that emanations from horses can cause hay-fever. What was meant is that in certain persons these emanations may cause symptoms like those of hay-fever. Such persons are likely to be taken with grave disturbances on the injection of horse-serum.

"THE LESSON IN ANATOMY"

To the Editor:—In connection with articles on Rembrandt's "Lesson in Anatomy" would say that I never examined picture closely, but heard that the origin and insertion of one of the muscles in picture is not anatomically correct. Is assertion correct? J. F. E. COLGAN, M.D., Philadelphia, Pa.

SCANDINAVIAN MEDICAL JOURNALS

To the Editor:—Please give me a list and the subscription prices of Swedish, Norwegian and Danish journals.

RALPH HOLM, M.D., Wolbach, Neb.

ANSWER.—Following is a list of periodicals and the subscription price of each:

Hospitalstidende.—Publisher, Jacob Lunds Boglade, Pilestræde 6, Copenhagen, Denmark; editor, T. Rovsing; weekly; price, $8.25 a year, plus postage.

Ugeskrift for Læger.—Publisher, Den alm. danske Lægeforenings Bureau, Gl. Strand 44, Copenhagen, Denmark; editors, H. Mygind, V. Scheel and H. Maag; weekly; price, $5.35 a year, plus postage.

Norsk Magazin for Lægevidenskaben.—Publisher, Steen'ske Boktrykkeri, Christiania, Norway; monthly; price, $5 per volume, plus postage.

Tidsskrift for den Norske Lægeforening.—Publisher, Centraltrykkeriet, Christiania, Norway; editors, P. Aaser and R. Hansson; price, $4.05 a year, including postage.

Hygiea.—Monthly; $5; Stockholm.

Nordiskt Medicinskt Arkiv.—Irregular; 30 marks; Stockholm.

Upsala Läkareförenings Förhandlingar.—Irregular; 10 crowns.

ADMINISTRATION OF CALCIUM

To the Editor:—Please answer the following questions:

1. Which is the best salt of calcium to give intramuscularly or subcutaneously when you want calcium effect in case of calcium insufficiency? What about the irritation?
2. What are the dosage and dilution of solution of these salts when thus given?
3. Which is the best salt of calcium to give orally for an acidemia and for a calcium insufficiency?
4. What dosage orally?
5. Are the lactate and glycerophosphate equally good for a systemic effect of calcium for the nerves?
6. What foods have the largest percentage of calcium?

GEORGE F. WAY, M.D., Buffalo, Ill.

ANSWER.—1. The lactate of calcium is less irritating than the chlorid, and would probably be the best salt to give intramuscularly or by hypodermic injection. It is doubtful if the demand for calcium is ever so pressing as to require hypodermic injection.

2. A dose of 5 grains should be sufficient. Calcium, when administered internally, is rapidly excreted; hence there could be no object in giving large doses. It may be given in a 4 per cent. dilution.

3. The lactate and chlorid of calcium are commonly selected for internal administration. Of these the lactate is less irritating, and is preferable.

4. The dose is 0.5 gm., or 7½ grains.

5. Yes; the effect so far as the calcium is concerned will be the same. There is no good evidence that glycerophosphate has any special effect on the nerves or other functions.

6. Milk, yolk of egg, peas, egg-albumin, potato, wheat, beef. This order is determined by the proportion of calcium in the dried substance and would need some modification if we consider the foods in the form in which they are eaten.

FRANCIS ADAMS

To the Editor:—Please furnish me with some information touching the life of Francis Adams, LL.D., surgeon, the translator and editor of the works of Hippocrates, published under the auspices of the Sydenham Society of London.

CHARLES TURNER SANDS, M.D., Las Cruces, N. Mex.

ANSWER.—Francis Adams (1796-1861), born at Lumphanan, Aberdeenshire, Scotland, and known as "Adams of Banchory," from the village in which he practiced, and also "the Deeside scholar," was a graduate of Kings College, Old Aberdeen, and, after studying medicine, became an M.R.C.S. (London) in 1815. Although described as a good practitioner and a skilful operator, his specialty was his classical learning as applied to medicohistorical research. From the age of 15 on he is said to have devoted seventeen hours a day to the study of Virgil and Horace, reading each six or seven times in succession, and during his professional life he managed to read "almost every Greek work which has come down to us from antiquity, except the ecclesiastical writers." He had a large share in the compilation of Dunbar's Greek Lexikon (1840), to which

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he contributed a valuable list of Greek names of animals, plants, etc.; was the author of "Hermes Philologus" (1826), on the difference between Greek and Latin syntax, and published two volumes of translations of Greek poems (1820, 1853); but his most important works are his well-known editions of Paul of Aegina (1834) and Aretaeus (1856) with text, commentaries and translations, and particularly his English translation of the genuine works of Hippocrates (1849), with valuable historical introduction and notes, which is the standard English translation for all practical purposes. These three performances are the most important British contributions to the history of Greek medicine in Adams' time, and have not been surpassed since that time. Adams was a good surgeon, obstetrician and botanist, although it is said that he obstinately declined to believe that the fetal heart-sounds can be heard by auscultation. In his memory, there have been erected a monument at Banchory (put up by public subscription), a granite obelisk, with Latin inscription, and a marble bust in the University of Aberdeen.

GLYCID—ACETOL

To the Editor:—In THE JOURNAL, Jan. 31, 1914, p. 409, Abstract 40, mention is made of glycid and acetol. I do not find these terms in my dictionary. What are these preparations?

Q. D. V.

ANSWER.—Glycid is the oxid of hydroxypropene. The following formulas will make this relation plain:

Propene is $CH_2{:}CH.CH_3$; hydroxypropene is $CH_2{:}CH.CH_2.OH$, and the oxid of hydroxypropene has the following formula:

$$CH_2 \overset{O}{\diagup\diagdown} CH.CH_2.OH.$$

It is isomeric with lactic aldehyd and with acetol.

Acetol is hydroxy-acetone, an alcohol with the formula $CH_2.CO.CH_2OH$. The corresponding formula for acetone is $CH_3.CO.CH_3$. Acetol is isomeric with lactic aldehyd and with glycid. Both glycid and acetol lack only an atom of oxygen to change them into lactic acid: $CH_3.CH(OH)COOH$.

The close relation of these substances with lactic acid led to the question whether they might be transformed into lactic acid and thus lead to the formation of sugar. The experiments of Geer, Witzemann and Woodyat showed that this supposition is incorrect.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF POST-GRADUATE WORK, CONTRACT PRACTICE, LEGISLATION, MEDICAL DEFENSE, AND OTHER MEDICOLEGAL AND ECONOMIC QUESTIONS OF INTEREST TO PHYSICIANS

STATE LAWS ON COMMUNICABLE DISEASES

One of the most important functions which any department of our federal government can perform is the collection and publication of valuable information regarding conditions in the states. Owing to our peculiar form of government, there are many activities which, in other nations, are under the jurisdiction of the national government, but in this country are purely state functions. The regulation of public health except in matters in which the entire nation is affected, has always been considered to be one of the prerogatives of the state, and any efforts to enlarge the public health jurisdiction of the federal government always encounter a certain amount of opposition, regardless of the merits of the proposition, from those who were opposed to any extension of federal power at the expense of state authority. Practically everyone is agreed, however, that the collection and distribution of information by the federal government cannot possibly impair the authority of the state, but can be of great service in bringing about a more accurate knowledge of conditions. Entirely aside from any views which may be held on the possibility or advisability of a national Department of Health, or of further expansion of the present Public Health Service, there can be no difference of opinion among reasonable persons as to the value of any efforts which the present Public Health Service may make to collect and make available accurate information regarding health conditions in the different states. One of the most important subjects which could possibly be taken up in this connection is the study of state public health legislation. A most valuable contribution to the literature on this subject has just been issued by the United States Public Health Service, in the form of *Public Health Bulletin 62*. It is entitled "Communicable Diseases: An Analysis of the Laws and Regulations for the Control thereof in Force in the United States." It has been compiled by Dr. J. W. Kerr, Assistant Surgeon-General of the Public Health Service, with the assistance of Mr. A. A. Moll. It includes, first, a comparative study and analysis of the federal, state and territorial laws and regulations for the control of communicable diseases; secondly, court decisions enforcing and interpreting these laws, and thirdly, the complete text of all federal, state and territorial laws relating especially to the control of communicable diseases. The compilation is complete up to July 1, 1913. The value of this bulletin to public health officials and to those interested in public health legislation can hardly be overestimated. The detailed and accurate comparison and analyses of the laws will surely have a marked influence on the drafting of bills on this subject in the future, as well as on the interpretation and enforcement of laws already enacted. In the analysis of the laws and comments on their development, the authors point out the fact that all communicable diseases are preventable, but that an attempt to bring about such prevention solely through the enactment and enforcement of laws is impossible. The enforcement of laws in this country requires the support of public opinion, which, in turn, requires the education of the public by the presentation of facts showing the necessity and value of such laws. The authors also point out the necessity as an administrative measure of drafting public health laws on the most advanced and broadest scientific knowledge, leaving the regulation of technical details to the boards. They also show that reasonable appropriations are necessary for modern public health work, and that failure to provide sufficient funds practically amounts to nullification of the law, while ample provision in this respect will make it possible to prevent a large proportion of deaths now caused by communicable diseases. Finally, there must be uniformity in legislation and cooperation in administration between the federal, state and local health authorities. The history and development of public health legislation on communicable diseases is also carefully studied, it being shown that it is the intent of Congress, generally speaking, simply to cooperate with the states in this field, and not in any way to supersede them in the sovereign exercise of their police powers. It is recognized that this is a fruitful field for discussion, and that the extension of federal powers under the "commerce clause" is but a slow and doubtful process at best. That there must be cooperation with the federal government is evident on account of the possibility of spreading disease through interstate commerce, in order to control the interstate sale of serums, to secure uniformity of action among the states through annual conferences with the federal health authorities, and the like. In the matter of national quarantine, however, it is recognized that the federal health authorities must be supreme. This involves the control of quarantine, in foreign ports, on the high seas and in domestic ports of entry. It is also necessary for the federal government to control the public health questions involved in the restriction of immigration; but even the assumption of these powers as a purely federal function, and their evolution into a nation-wide system, has required nearly a century since the adoption of the Constitution. One sees in this a suggestion, although there is no statement to this effect in the bulletin, whether the tendency of public health legislation in this country is not perhaps at first an attempt toward uniformity and cooperation by the states with ultimately a recognition of the necessity of universal federal control. The entire bulletin is of the utmost value to the student of public health legislation and administration. The sections citing court decisions and the reprint of the texts of the laws are of self-evident value. The bulletin is a most creditable piece of work both to the Public Health Service and to Dr. Kerr, under whose supervision it was compiled.

PUBLIC HEALTH MEASURES IN STATE LEGISLATURES

Last winter probably marked the climax of weird, erratic and uncontrolled efforts at state public health legislation. In the forty-three state legislatures which met at some time during 1913, an indefinite and indeterminate number of bills on public health topics were introduced. How many there were it is impossible to say accurately. There were over one thousand and probably nearly twelve hundred. In practically every state, bills on almost every conceivable phase of public health, especially its popular aspects, were before the legislature. Many of the bills were, no doubt, carefully drafted, and if their passage could have been secured they would have been valuable additions to the laws of the state. Most of them, however, represented hobbies and theories, rather than facts. To expect legislatures composed mainly of laymen without any scientific knowledge to separate the wheat from the chaff was asking an impossibility. Some of the states undoubtedly secured valuable additions to their public health laws, but in many cases the patience of the legislatures was exhausted through the presentation of loosely drafted measures not in shape for serious consideration. A conspicuous example is the Wisconsin law requiring a health certificate of the groom as a condition for the issuing of a marriage-license. Whether the "horrible example" presented by Wisconsin has had a deterring influence on the state legislatures, or whether the moderation shown is simply a reaction from the extremes of a year ago, it is markedly apparent that the number of proposed public health measures this year is greatly reduced.

According to the best available information the legislatures are at present in session in Georgia, Kentucky, Maryland, Massachusetts, Mississippi, New Jersey, New Mexico, New York, Ohio, Rhode Island, South Carolina and Virginia. In May the Louisiana legislature will meet. So far the bills on public health topics are few. In Georgia, a bill providing for the medical inspection of schoolchildren has passed the senate. The bill provides that medical services for such inspection are to be furnished free, that no permanent appointments are to be made and that no facilities for inspection are to be provided by the state. Apparently, the physicians of Georgia are willing to donate their services, feeling sure that the results secured will justify a continuance of this work. In Kentucky, a bill moving the office of the State Board of Health to Frankfort is before the senate, the committee having reported against it. In Massachusetts, a bill limiting the sale of mercuric chlorid tablets has been introduced. In Mississippi, bills are under consideration for the establishment of county sanatoriums for tuberculosis and providing sanitary closets for rural schools. In New York, the usual antivivisection bill has been introduced by those who have been carrying on a professional antivivisection campaign for years past. This bill was introduced by Senator Herrick of New York City, and provides for a commission of seven to investigate the entire question of animal experimentation. The commission is to consist of two physicians "practicing vivisection," two persons connected with societies for the prevention of cruelty to animals and three attorneys. In New Jersey, a bill similar to the Wisconsin law has been introduced, requiring each party to a marriage contract to present a certificate from a reputable physician certifying their freedom from disease. A bill has also been introduced defining the practice of medicine, under the medical practice act, so as to include "those who hold themselves out to the public as able to diagnose, treat, operate or prescribe for any injury, disease, or who shall use the designation M.D. or M.B." In Ohio a bill has been introduced requiring practicing physicians to pass an examination every two years in order to retain their license. In Virginia, a bill has again been introduced removing the occupation tax on physicians. The medical profession of the state has been endeavoring for several years to secure the repeal of this measure. An optometry bill has also been introduced. The state board of health has asked for a special appropriation to establish a sanatorium for negro consumptives. In South Carolina, a bill similar to the Wisconsin law regulating marriage was killed in the senate.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

CONNECTICUT: New Haven, March 10. Sec., Dr. Charles A. Tuttle, New Haven. Homeopathic: New Haven, March 10. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic: New Haven, March 10. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

MAINE: Portland, March 10-11. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

MASSACHUSETTS: Boston, March 10-12. Sec., Dr. Walter P. Bowers, Room 159, State House, Boston.

WYOMING: Laramie, March 10-12. Sec., Dr. H. E. McCollum, Laramie.

Medical Scholarships at the University of Virginia

The current catalogue of the University of Virginia announces that under the will of Dr. Cumberland George Herndon, two scholarships named after the testator's father, the William A. Herndon scholarships, have been founded in the Department of Medicine of that institution. Candidates must be unable to defray expenses of their medical education except by borrowing or doing outside remunerative work during the session, and must signify their intention of entering the medical service of the Army or Navy of the United States. The scholarships provide for the necessary expenses of the student during the four years of his medical course, and will yield approximately from $425 to $450 per annum, according to the income from the fund. They will be awarded as vacancies occur. One will be awarded in September, 1914.

Texas June Report

Dr. W. L. Crosthwait, secretary of the Texas State Board of Medical Examiners, reports the written examination held at Austin, June 24-26, 1913. The number of subjects examined in was 12; total number of questions asked 120; percentage required to pass, 75. The total number of candidates examined was 147, including 10 osteopaths, of whom 138 passed, including 9 osteopaths, and 9 failed, including 1 osteopath. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent.
Birmingham Medical College	(1912)	78
University of Colorado	(1913)	91.7
College of P. and S., Atlanta	(1905) 84.5; (1913)	80
Chicago College of Medicine and Surgery	(1913, 2)	82, 82
University of Louisville	(1911) 78; (1913) 75.4, 76, 77, 80, 80.5, 89.9.	
Tulane University	(1912) 85, 88; (1913) 85, 85.7, 87, 87	
Johns Hopkins University	(1910)	87
American Medical College, St. Louis	(1913)	78.7
Columbia University, Coll. of P. and S., N. Y.	(1912)	81
University and Bellevue Hospital Medical College	(1908)	87
Leonard Medical College		85
Jefferson Medical College	(1906)	90
Vanderbilt University	(1913) 78.2, 80, 82, 83.1, 87, 87.5, 88, 88.5	
Memphis Hospital Medical College	(1896) 80; (1902) 84; (1912) 78.5.	
Sewanee Medical College	(1899)	83
Meharry Medical College	(1907) 76.2, 78; (1912) 79; (1913) 75.5, 76.7, 79.7, 81.5, 82.5, 83.3, 85, 85.5	
Fort Worth School of Medicine	(1913) 80, 80, 81, 82, 85, 85, 86.2, 87, 87.5.	
University of Texas	(1911) 87.5; (1913) 77.7, 78.2, 79, 81, 81.4, 81.5, 82, 82, 82.3, 83, 83.5, 84, 84.2, 84.5, 85.3, 86, 86, 86, 86.5, 87, 87, 87, 88, 88, 88.2, 88.5, 89, 89.2, 90, 90, 90.5, 90.9, 92.9	
Southern Methodist University	(1912) 84; (1913) 75.1, 78, 79, 79, 79.5, 82.5, 82.7, 83, 83, 86, 86, 88, 88.5.	
Baylor University	(1912) 76; (1913) 75.2, 77, 77.9, 80, 82, 82, 82, 82.5, 83, 84, 85, 86, 86, 87, 87, 88.7, 89, 90.	
National School of Medicine, Mexico	(1880)*; (1895)*; (1901)*	
Monterrey Medical College, Mexico	(1889)*	
†		76.5

FAILED		
University of Louisville	(1912)	*
Meharry Medical College	(1912) 54, 66.5, 75.7‡	*
University of Tennessee	(1912)	72.7
Baylor University	(1913)	70.5
Fort Worth School of Medicine	(1912)	58.2

* No grade given.
† No college given.
‡ To come before review committee.

The following questions were asked:

ANATOMY

1. Give the course and distribution of the trifacial nerve. 2. Name and give the origin of the arteries supplying the stomach, small intestines, large intestines. 3. Give the course and branches of distribution of the femoral artery. 4. Name the ligaments of the

knee-joint. 5. Name the structures forming the larynx. 6. Give the formation of the brachial and lumbar plexus and name main branches given off from each. 7. Enumerate the bones forming the orbit. 8. Give origin, insertion, nerve-supply and action of the pronator radii-teres muscle. 9. Describe the diaphragm, its principal openings and nerve-supply. 10. Give the characteristic points of cervical, dorsal and lumbar vertebrae.

HYGIENE

1. What are the diseases by preventing which the average of human life could be prolonged? 2. How would you disinfect a room after occupancy by a patient with an infectious disease? 3. What methods do you adopt to prevent infection during labor, and what instructions do you give for the care of the mother and child during the lying-in period? 4. What are the parasitic diseases that may be caused by meat insufficiently cooked? 5. What are the principal pathogenic bacteria found in milk? 6. How would you test milk for impurities? For adulterants? 7. What is the difference in appearance between healthy and spoiled meat? 8. Give five reasons from a hygienic standpoint why the fly should be swatted. 9. In what ways is meat adulterated or "doctored"? 10. What amount of floor-space should be allowed in a schoolroom for each child? Give proper height of ceilings of schoolrooms, and what should be least window area in proportion to size of window?

MEDICAL JURISPRUDENCE

1. For medicolegal purposes "mortuary law" is classified into four divisions; name them. 2. What do you understand by the term "suggillation?" Give its medicolegal significance; describe a post-mortem in a medicolegal case. 3. Give methods employed in the identification of blood-stains and examination of blood; differentiate between human and animal blood. 4. Give four common causes of death from wounds; differentiate between punctured and penetrating wounds inflicted before and after death. 5. Differentiate post-mortem findings of carbonic-acid gas and sulphuretted hydrogen gas. 6. Name seven forms of medicolegal pregnancy; give medicolegal importance of the uterus in the dead. 7. Give conditions or grounds warranting "justifiable abortion"; give the necessary safeguards to be observed, so as not to be held responsible for assault and criminal abortion. 8. In the consideration of insanity and its relations to the law give the two important questions to be determined; give distinction between intellectual and moral insanity. 9. Give four classifications or divisions of monomania and define each. 10. As applied to life insurance, what is meant by "material concealment?" Give relations of suicide to life insurance.

PHYSICAL DIAGNOSIS

1. State physical signs of pyloric stenosis. 2. Differentiate lobar from bronchopneumonia. 3. Give the physical signs of Raynaud's disease and describe the different grades. 4. State the principal diagnostic symptoms of scarlatina, diphtheria, variola, rubeola. 5. What is Cheyne-Stokes respiration? Argyll Robertson pupil? Widal's test? Wassermann reaction? Koplik's spots? 6. State briefly the principal diagnostic points of tetanus, exophthalmic goiter, chorea. 7. What are the plantar reflexes? What is the diagnostic value of the plantar reflexes? 8. Aortic and mitral insufficiency, where is the murmur heard most distinctly, and what is its direction of transmission? 9. Give differential diagnosis in ascites and cystic ovary. 10. Give differential diagnosis in cerebrospinal meningitis and acute anterior poliomyelitis.

PHYSIOLOGY

1. Give average normal temperature, rate of pulse and of respiration in (*a*) the infant, (*b*) the adult, (*c*) the aged. 2. Define protoplasm, and give the characteristic properties of living protoplasm. 3. Describe the heart-sounds and state to what they are due. 4. What digestive changes take place under the influence of saliva and of gastric juice? 5. State the origin and function of bile; give quantity secreted in twenty-four hours. 6. Describe the process by which digested food is absorbed. 7. Describe the physical properties of the blood and name its constituents. 8. State origin of urea in the body; give average amount excreted in twenty-four hours. 9. Give function of (*a*) medulla oblongata, (*b*) the cerebellum. 10. Describe in detail how the placenta performs its functions.

PATHOLOGY

1. Name some of the tissue changes incidental to old age. 2. Give the pathology of acute lobar pneumonia. 3. Name some of the most essential lesions found in acquired syphilis. First, second and third stages. 4. Name the chief findings in enteric fever. 5. Give the pathology of chronic interstitial pneumonia. Give the pathology of hemorrhoids. 7. Name the morbid changes resulting from disease of the pituitary body. 8. What morbid condition is brought about from disease of the adrenals? 9. Name some of the pathologic changes resulting from cerebral hemorrhage. 10. What is an opsonin? 11. What do you understand by productive inflammation? 12. What is the pathology of diabetes mellitus? Answer as many as ten of the above questions.

SURGERY

1. What are the symptoms of air embolism? Give treatment. In what region are surgical operations most liable to be followed by this condition? 2. Give the symptoms of simple, compound and compound comminuted fracture and treatment of each condition of tibia and fibula. 3. Give symptoms of patient undergoing tracheotomy; then intubation, and describe fully each operation. 4. Diagnose an infective exudate of the pericardial sac, beyond controversy, and state how you are going to relieve this condition. 5. Differentiate tuberculous and syphilitic synovitis. Give structural changes that induce symptoms of, and describe in detail Bassini's operation for strangulated, oblique inguinal hernia. 7. Differentiate concussion, comprehension and congestion of the brain. 8. Give differential diagnosis of pelvic peritonitis and impaction of feces. 9. Give signs and symptoms of cervical rib, and state how cervical rib produces signs and symptoms. 10. How should a dissecting wound and attendant blood-poisoning be treated? What is rational treatment of suppurative abscess from its initial symptom? Give symptoms and treatment of psoas abscess, and state with what condition it may be confused.

GYNECOLOGY

1. Give the (*a*) clinical diagnosis, (*b*) microscopic diagnosis of carcinoma of the cervix uteri. 2. Differentiate between tubal pregnancy and ovarian cyst. 3. Name and describe the ligaments of the uterus and briefly outline an adequate operation for the correction of retroversion of the uterus. 4. What pathologic conditions demand hysterectomy? 5. Give a clinical description of a case of chronic pyosalpinx and outline an adequate surgical operation for relief of same. 6. Define amenorrhea, dysmenorrhea, menorrhagia, metrorrhagia and vicarious menstruation. 7. Describe clinically and pathologically three types of endometritis. 8. Describe the ovary (*a*) as to its anatomic relationships; (*b*) as to its physiologic function. 9. A woman aged 35 has an intermenstrual flow or discharge streaked with blood; mention four probable causes of same and make differential diagnosis with reference to malignant disease. 10. Give the etiology, pathology and clinical diagnosis of chronic cystitis of women.

OBSTETRICS

1. Describe the changes that take place from the time the ovum is impregnated to the beginning of the second month. 2. Give the cause and mechanism of labor. 3. How would you manage a shoulder presentation? 4. Define ectopic gestation. Differentiate same from uterine pregnancy. 5. Give etiology and management of eclampsia. 6. Define uterine inertia. (*b*) What do you understand by primary and secondary inertia? Describe same. 7. Give management of third stage of labor. 8. How would you do a podalic version? 9. Give management of puerperal stage. 10. Give etiology of hyperemesis and management of same.

CHEMISTRY

1. Complete the following equation: $NaCl + H_2SO_4 =$..... and name resultant compounds. 2. Differentiate ethyl alcohol from methyl alcohol, giving formula of each. 3. Name three extensively used carbon compounds which under certain conditions are dangerous to life. 4. State source of cyanogen gas and name two most important compounds. 5. Give a reliable test for nitrites. 6. (*a*) From what is the alkaloid muscarin derived? (*b*) Give symptoms of poisoning, (*c*) fatal dose, and (*d*) physiologic antidote. 7. How would you test water suspected of sewage contamination? 8. Describe a reliable method of determining the quantity of urea in a specimen of urine. 9. Describe a test for, (*a*) albumin, (*b*) sugar, (*c*) pus, (*d*) blood, (*e*) indican and (*f*) chyle. 10. Name chemical antidote for nitrate of silver or lunar caustic, and say how it acts.

Minnesota January Report

Dr. Thomas S. McDavitt, secretary of the Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held at Minneapolis, Jan. 7, 1914. The number of subjects examined in was 10; total number of written questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 6, of whom 3 passed and 3 failed. Ten candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
College of Physicians and Surgeons, Chicago	(1909)	87
Detroit College of Medicine	(1906)	82
University of Minnesota	(1893)	79

FAILED

Bennett Medical College	(1913)	*
Minneapolis College of Physicians and Surgeons	(1908)	71
Marquette University	(1908)	71†

* No grade given.
† Fell below 75 per cent. in major branches.

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Chicago College of Medicine and Surgery	(1913)	Illinois
College of Physicians and Surgeons, Chicago	(1906)	Iowa
Northwestern University	(1900) Illinois; (1911) Illinois; (1912) Illinois.	
Rush Medical College	(1903) Illinois; (1911)	Illinois
University of Illinois	(1913)	Illinois
Jefferson Medical College	(1905)	Vermont
Marquette University	(1912)	Wisconsin

New Hampshire January Report

Dr. H. C. Morrison, regent of the New Hampshire State Board of Medical Examiners, reports the written examination held at Concord, Jan. 6-7, 1914. The number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 11, of whom 9 passed and 2 failed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Howard University	(1913)	79
Boston University	(1912) 90; (1913)	93
Tufts College Medical School	(1913) 81,	82
Dartmouth Medical School	(1911) 75; (1913) 84,	87
University of Vermont	(1913)	77

FAILED

National University, Athens, Greece	(1897)	43
Tufts College Medical School	(1895)	59

Book Notices

STUDIES CONCERNING GLYCOSURIA AND DIABETES. By Frederick M. Allen, A.B., M.D. Cloth. Price, $9. Pp. 1179. Boston: W. M. Leonard, 1913.

"The present work," the author says, "represents three years of research in the Laboratory of Preventive Medicine and Hygiene of the Harvard Medical School." It is in no sense a clinical study and contains no direct clinical observations. Concerning the scope of the monograph Allen says, "It aims primarily to present the results of research."

The volume is large, and the greater part is devoted to an elaborate presentation of the literature. This review represents a stupendous and commendable work agreeably done and possessing a genuine value for the investigator who desires to grasp what has been accomplished in an unfamiliar department of diabetic investigation. As arranged by Allen and interlarded with his original comment and speculation, it forms suggestive and entertaining literature, revealing many facts which have not received the emphasis due them, and, indeed, sending the imagination on many a rapid flight. This constitutes the most commendable feature of the book.

In general it may be said that the experimental work has been mainly on the administration of different sugars by different methods (oral, subcutaneous, intravenous, etc.), to different species of laboratory animals in a state of health and in the glycosuric states produced by such procedures as piqûre, epinephrin, phlorhizin and pancreatectomy. Observations were made on the intensity of the glycosuria and on the diuretic or antidiuretic effects of the doses given. There are also many data and much comment concerning the operation of pancreatectomy—total and graduated. A few salient features may be picked out for discussion.

Allen says that if about four-fifths of the pancreas be removed in such a way that the remaining fifth is left in communication with the ducts or duct, this fifth will serve to prevent the occurrence of diabetes, as is known to be the case when other parts are left; but that in this instance the intestinal digestion and general nutrition are only slightly impaired and the dog remains in exceptionally good condition. In the course of time diabetes develops as in other experiments of the Sandmeyer type. This scheme provides apparently a valuable technic for the preparation of diabetic material for laboratory purposes.

Another feature on which Allen lays particular stress is what he terms the "paradoxical law." "Briefly, this law is that the more sugar is given, the more is utilized. Limits of tolerance in non-diabetic animals are all apparent, not real. There is no real limit of the power of utilization of sugar, except death. The law applies to all species of animals, to all methods of administering sugar, and to all sugars and carbohydrates, provided they can be utilized at all. The paradoxical law of dextrose distinguishes sharply between diabetic animals and every type of non-diabetic animals. The limits of tolerance in diabetic animals are real and not apparent. In totally diabetic animals, an injection of dextrose causes an increment of glycosuria not only equal to, but frequently greater than, the injected dose. In milder diabetes, not only is the proportion of excreted to injected dextrose generally high, but the assimilation may be made worse instead of better by overdoses." Allen also attaches great importance to the diuretic or antidiuretic effects of doses of sugar when given by different methods in different conditions. We quote:

"The observations of numerous investigators, that all the common sugars are diuretics when given intravenously, was verified. But all the freely utilizable sugars when given otherwise than intravenously (orally, subcutaneously, intraperitoneally; also, according to Halasz, rectally) are antidiuretics; i. e., they diminish the output of urine. In other words, as respects diuresis, these sugars, when given intravenously, obey the law of crystalloids, and when given otherwise they obey the law of colloids. On the basis of this diuretic test, diabetes was distinguished experimentally from the following forms of glycosuria." Alimentary, hunger, toxic, phlorhizin, thyroid and nervous glycosuria are enumerated.

"The explanation proposed for these phenomena is that dextrose exists in the normal body in a state of colloid combination; as a colloid it can be utilized by the tissues, and it diminishes diuresis like other colloids. It assumes the colloid form in passing through any living membrane; it never circulates in crystalloid form in the normal organism except for a certain length of time after direct intravenous injection. In the diabetic organism, dextrose circulates as a free or very poorly combined crystalloid; in this state it is not available to the tissues, and it is a diuretic like other crystalloids."

The chief facts brought out by Allen have in most instances been noted before, but probably never have received the emphasis, or exactly the interpretation here given them. That free crystalloid sugar is diuretic is not a new conception. That the antidiuretic effect of utilizable sugars in health is due to sugar in colloid combination, if expressed before, has not gained currency. The facts that Allen employs in his arguments are in the main correct, but not wholly so; the interpretation offered is by no means an inevitable one, although highly interesting. Most clinicians who have seen much diabetes will recall cases in which the glycosuria and diuresis did not run parallel even in the severe cases of genuine diabetes mellitus; and those familiar with phlorhizin will hesitate to accept Allen's conclusions regarding it.

When the ratio of the velocity at which sugar enters the blood to that at which it is utilized exceeds a certain value, diuresis may be expected—in health or in diabetes. When the rate of entry is less than, equal to, or but little greater than the possible rate of utilization, the opposite effect may be expected—in health or in diabetes, or in phlorhizin glycosuria. It surely never has been proved that there is no limit to the rate at which sugar can be made to burn in the body. In a case of severe diabetes a relatively slow entrance of sugar into the blood (oral administration) might be expected to produce the same effect which in health is attainable only by a very rapid entry (intravenous injection). And so in some cases of diabetes the alimentary or subcutaneous methods may suffice to cause diuresis, whereas in health the intravenous method must be resorted to in order to obtain parallel results, and in phlorhizin glycosuria diuresis can be produced with dilute sugar solutions slowly given.

Allen's proposal that these phenomena are ascribable only to the power of "living membranes" to link up sugar into a colloidal combination with a specific "pancreatic amboceptor," lack of which constitutes "a condition *sui generis*" known as diabetes, would seem to be a step away from the sun of the pure sciences, the expression of a physicochemical problem in terms of Ehrlich's hypothesis. Nevertheless there is food for thought in Allen's concept, in his arguments favoring the idea that normal blood-sugar is in some sort of colloidaf combination, and in his analysis of other phases of the diabetic problem. The book will have a stimulating effect.

KURZER LEITFADEN DER PSYCHIATRIE. Für Studierende und Aerzte. Von Dr. Ph. Jolly, Assistenten an der Psychiatrischen und Nervenklinik in Halle a.S. Paper. Price, 4 marks. Pp. 240. Bonn: A. Marcus & E. Webers, 1914.

This is a concise compend of psychiatry which aims to give the chief and generally recognized facts regarding mental diseases, especially those of practical importance, avoiding theoretical considerations as far as possible. Seventy-two pages are devoted to general psychiatry, with consideration of general etiology, symptomatology, diagnosis, pathology, prognosis and treatment, giving clear definitions of terms used in psychiatric literature and detailed and practical directions for taking the history and making physical and mental examinations. Descriptions are given of tests for all the principal physical and mental symptoms and signs encountered, and brief statements are made as to the significance of each one and the mental diseases in which it is apt to be found. The author does not discuss the subject of psychanalysis. A special portion deals with individual conditions.

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Miscellany

Standardizing Mercuric Chlorid Tablets.—The frequent cases of poisoning by mercuric chlorid tablets sold to the laity in the drug-stores, usually under the name of antiseptic tablets, has brought forth many suggestions as to the manner in which these tablets should be prepared and dispensed in order to give them a distinctive character and of calling attention to their poisonous properties. A large number of these tablets are put on the market by different pharmaceutical manufacturers in different shapes and colors, some in distinctive bottles or packages and containing various quantities of the poisonous salt. M. I. Wilbert of the United States Public Health Service in *Public Health Reports*, Nov. 14, 1913, discusses the subject of these poisonous tablets and says that at present there is sufficient legislation, if enforced, to serve as a reasonable safeguard in connection with their sale. Thirty-eight states include corrosive sublimate specifically in the laws designed to restrict the sale of poisons, and only in the law of Utah are corrosive sublimate tablets exempted from registration in the poison register. During 1913, Oregon, Nevada and California enacted modified poison laws and specifically enumerated tablets of corrosive sublimate in the poison schedule required to be registered when sold. They also specifically enumerated "antiseptic tablets containing corrosive sublimate." It has been suggested that a type of corrosive mercuric tablets or pastils be introduced into the Pharmacopeia of the United States. The German Pharmacopeia has such a preparation of mercuric chlorid. The pastils are to be colored a bright red with anilin dye, must have a cylindrical shape and be twice as long as thick. They are to be wrapped individually in black paper bearing the German equivalent of the word "poison" in white letters. The weight of the tablets must be stated, and they must be dispensed in glass bottles or tubes. It is suggested that the inclusion of an official tablet of corrosive mercuric chlorid in the U. S. Pharmacopeia need not interfere with the established trade of manufacturers, and Wilbert suggests that if manufacturers would label their preparations so as to indicate the presence of highly toxic substances and suggest to purchasers the need for keeping them apart so that they would not be mistaken for other substances, then perhaps no additional legislation would be required on the subject. It is also suggested that newspapers should not publish the details of the kind of poison used in cases of accidents or intentional poisoning.

Coal-Mine Accidents in the United States.—Foreign countries in which mining is carried on extensively have had official statistics of coal-mine accidents for many years: Belgium since 1831, Great Britain since 1851, Germany since 1852, France since 1853 and Austria since 1875. Until 1912, no official figures as to coal-mine accidents in the United States were gathered by the United States government, but beginning with that year the federal Bureau of Mines has compiled the figures, and in Bulletin 69 a tabulated and classified statement of coal-mine accidents is given. It includes not only figures for 1912 as gathered by the Bureau of Mines, but also figures for years since 1896 as obtained from state mine inspectors, operators and other sources. A tabulated statement of the production of coal, number of men employed, number killed, etc., for the years 1896 to 1912 shows an almost steady rise in the number killed per thousand of men employed, from 2.84 in 1896 to 3.15 in 1912, with high points of 4.88 in 1907 and 4 in 1909, the highest figure, in 1907, being accounted for by four exceptionally disastrous mine explosions. This increase in the death-rate from accidents may be accounted for partially by the increase in the production of coal per man. In 1896, for instance, every man employed produced 2.64 tons of coal per day, whereas, in 1907 the daily production for each man was 3.06—an increase of 16 per cent. with its consequent greater risk. Stated in another way, however, it is shown by the table that in 1896, 170,000 short tons were produced for each death, while in 1912 the amount was 233,000 short tons. Though during all this time increased attention was given to mine safety and prevention of accidents, yet the rapid change in methods and the enormous increase in production were not accompanied by corresponding measures to decrease risk. In 1908, Congress authorized the United States Geological Survey to investigate the causes of mine explosions with a view to increasing safety in mining. The work was placed under the direction of the Bureau of Mines and in 1910 a separate bureau on mine safety work was established. Since 1908 there has been an annual decrease in the number of men killed per million tons of coal mined. The most marked improvement was in 1912, when the number of men killed was less than any other year since 1906, and the death-rate per million tons of coal mined was the lowest on record, and 359 men (13.2 per cent.) less than the figures for 1911, in spite of the fact that there were more men employed in the mines and more coal mined than in any previous year. The death-rate per thousand men employed in 1912 was 3.15, as against 3.73 the previous year. The improvement in later years has been brought about, as the bulletin states, by a combination of causes the principal of which has been more effective and more efficient mine inspection on the part of state mining departments and state mine inspectors, supplemented by greater care on the part of both the operators and the miners. Further improvement will depend largely on the care exercised by all those concerned in the coal-mining industry.

The Work of the Bureau of Child Hygiene.—In New York it is found that 36 per cent. of infant mortality occurs during the first month, and it has been concluded that the majority of the babies die because the mothers were physically unfit to bear healthy children or because of their ignorance of the proper care of their infants. The bureau, therefore, has established a center of instruction for nurses at one of the milk-stations, and the nurses have been assigned to canvass the neighborhoods and persuade expectant mothers to place themselves under medical care as early in pregnancy as possible. These cases are reported to the district doctors of the department of health, the mothers are instructed, in detail, with regard to diet, fresh air, exercise, clothing, etc., and they are impressed with the importance of nursing their infants. In normal cases, visits are made by the nurses every ten days before the birth of the children, every three days after for a month, and in abnormal cases as often as may be necessary. The mothers are then requested to enrol their children at the milk-station, at which they are cared for during the first and second years. Thus far 175 mothers have been enrolled, and twenty-five children have been cared for in this manner.

Public Health Work in Porto Rico.—W. W. King of the United States Public Health Service, in *Public Health Reports*, Dec. 12, 1913, makes a report of the work of the Institute of Tropical Medicine and Hygiene of Porto Rico, to Oct. 31, 1913. The institute was organized under the provisions of the legislative assembly of Porto Rico, for the purpose of studying tropical diseases incident to that island, and is the outcome of the control of that island by the United States, following the work of the medical corps under Dr. Bailey K. Ashford in hookworm disease. The plan of the institute for work in the islands comprised three months of teaching, instruction of sanitary officials, inspectors, etc., three months of expeditionary work in the interior of the mountainous districts and six months of work at the laboratory and hospital at San Juan, where the permanent headquarters are located. The expedition in the mountains was for the purpose of studying the diseases of the interior, the establishment of a rural outdoor medical service and the education of planters and laborers in elementary hygiene and sanitation. It has been estimated that from 50 to 70 per cent. of the population of the rural districts were in need of medical attention with practically none provided. The headquarters of the expedition is at Utuado on a large sugar plantation, where a well-equipped dispensary and hospital with thirty beds has been established. In order to induce the people to come to the dispensary established, arrangements were made

for the treatment of hookworm cases which brought large numbers of the people to the dispensary. Other diseases of all sorts were then studied and treated among the 7,500 patients who presented themselves. Among the diseases of tropical nature studied were schistosomiasis and "la bonita," which is a name given by the country people to an affection whose chief symptom is anasarca. This disease is limited to the country districts and sometimes occurs epidemically. A nephritis seems to be the chief feature of the disease. Sprue, amebic dysentery, malaria and trachoma are among the other diseases studied.

Medicolegal

Representatives Who May Waive Privilege

(Oldenburg v. Leiberg (Mich.), 142 N. W. R. 1076)

The Supreme Court of Michigan says that the statute of that state, as amended in 1909, reads: "No person duly authorized to practice physic or surgery shall be allowed to disclose any information which he may have acquired in attending any patient, in his professional character, and which information was necessary to enable him to prescribe for such patient as a physician, or to do any act for him as a surgeon: Provided, that after the decease of such patient, in a contest on the question of admitting the will of such patient to probate, the heirs at law of such patient, whether proponents or contestants of his will, shall be deemed to be personal representatives of such deceased patient for the purpose of waiving the privilege hereinbefore created." Assuming that heirs at law of a decedent are both contestants and proponents of the will, may the contesting heirs, or the proposing heirs, or either of them, waive the statute privilege of the deceased, the patient?

Before the statute was amended, it had been held by this court that information acquired by observation while the physician was in attendance on his patient, as well as communications made by the patient to the physician, was excluded, that the rule established by the statute is one of privilege, which the patient may waive, and that what he may do in his lifetime those who represented him may also do for the protection of the interests they claim under him, but that, in a will contest between a legatee and a contesting heir at law, the heir at law is not the representative of the deceased, and is an adverse party, with no right to waive the statute privilege.

This being the state of the law, the legislature amended the statute in the manner hereinbefore indicated, and the court holds, because it thinks no other ruling will give effect to all of the provisions of the amendment, that any heir at law, proposing or contesting the probate of a will, is, for the purpose of waiving the privilege, a personal representative of the deceased. With the wisdom of the legislation the court has nothing to do, and therefore does not attempt to contrast the alleged beneficial with the harmful results which may attend the application of the statute in cases which may be supposed.

Agreements to Split Fees Void as Against Public Policy—Cross-Examination—Including in Suit Fees for Assistant at Operation

(McNair vs. Parr (Mich.), 143 N. W. R. 42)

The Supreme Court of Michigan reverses a judgment recovered by the plaintiff for professional services in operating on the defendant for hernia and on his daughter for appendicitis, and grants a new trial. The court says that the defendant claimed, among other things, that at the time the causes of action arose there existed between the plaintiff and a Dr. Stuck, who was then the defendant's physician, an unlawful agreement and combination, by which the plaintiff and Dr. Stuck were to divide the fee which the defendant was to pay the plaintiff for the surgical operations and professional visits mentioned in the plaintiff's bill of particulars, which combination was unlawful and void, as contrary to public policy, and in violation of the statutes and common law of the state.

It was the claim of the defendant that Dr. Stuck could not be the agent of both of the parties to the suit, while he was at the same time assisting in these operations as the family physician of the defendant; that he could not draw pay from both parties, without the knowledge of all the facts by the defendant; that any tacit understanding or agreement between the two physicians of any division of the plaintiff's fees between them would be against public policy and void; and that the defendant had a right to show that the plaintiff had charged an unreasonable sum for his services, in order to divide his fees with Dr. Stuck. That such a contract is against public policy the defendant cited a number of Michigan cases, also 9 Cyc. 481, 482; 34 Cyc. 1430. The court is of the opinion that the cited authorities support the claim of the defendant, and that any agreement of the plaintiff to split his fees with Dr. Stuck, without the knowledge of the defendant, would be void as against public policy.

The court also thinks that too strict a rule was applied in the cross-examination of the plaintiff, to the prejudice of the defendant, when the latter sought to show a tacit understanding between the plaintiff and Dr. Stuck, growing out of their former practice in other similar cases, in the matter of a division of fees. Considerable latitude should be allowed in cross-examination when fraud is claimed.

There was error, too, in a refusal to charge the jury that they could not allow the plaintiff any money for the services of Dr. Stuck rendered at these operations. The plaintiff, after testifying that his bill was only for his personal work, changed his position and testified, in answer to a question by the court, that his bill included Dr. Stuck's bill. If the judgment rendered in the plaintiff's favor were to stand, the defendant might have to pay twice for the services of Dr. Stuck. That they were included in that judgment might be presumed under the charge of the court; but the value of such services did not appear. Dr. Stuck was not a party to or bound by that judgment, and might maintain a suit against the defendant for his services.

Liability of Surgeon of Charitable Institution for Leaving Spring from Packer in Uterus

(Wharton vs. Warner et al. (Wash.), 135 Pac. R. 235)

The Supreme Court of Washington directs that a judgment be entered against the defendant Warner for damages for malpractice. The court says that he was employed at a sanatorium as the surgeon in charge thereof, and that in the treatment of Mrs. Wharton, by a curettement of the uterus, he used a uterine packer, and a spring therefrom, some 12 inches in length, became detached from the machine and was packed into the uterus and allowed to remain therein for a period of fifteen days.

Passing to the law of the case, it may be announced as one of the fundamentals of the law that negligence is never presumed, but that it must be affirmatively established by competent evidence.

It is equally well settled that, when a physician and surgeon takes charge of a case, he impliedly represents that he possesses, and the law imposes on him the duty of possessing and exercising, reasonable skill and learning, that is, such skill and learning as is possessed by the ordinary practitioner in that general locality, measured by the state of medical and surgical science at the time the service is rendered.

Tested by these principles, there was abundant evidence of Dr. Warner's negligence. Indeed, it would excite surprise had the jury returned a different verdict. The jury was warranted in finding (*a*) that he was guilty of negligence in leaving the spring in the uterus; (*b*) that he was negligent in failing to discover and remove it; and (*c*) that the packer with which he performed the operation was not then used by surgeons possessing average learning and skill in that locality.

It was argued (1) that whether a surgical operation was unskilfully performed is a question of science, and is to be

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determined by the opinion evidence of surgeons; and (2), in effect, that a bad result standing alone is no evidence of unskilful surgery. From these postulates it was argued that there was no evidence to sustain a verdict against this defendant. Both propositions are sound when soundly applied. The reason is that in most cases a layman can have no knowledge whether the proper medicine was administered or the proper surgical treatment given. Whether a surgical operation was unskilfully or skilfully performed is a scientific question. If, however, a surgeon should lose the instrument with which he operates in the incision which he makes in his patient, it would seem as a matter of common sense that scientific opinion could throw little light on the subject. So, in this case, when a surgeon loses a metallic spring about 12 inches in length, and about 1/16 of an inch in width, in the body of his patient, and fails to discover and remove it, it would seem that a jury would have abundant justification for inferring negligence without the aid of expert testimony. But, putting this view aside, the court thinks that the evidence set forth was insufficient to support the verdict.

But the medical missionary and benevolent society, organized for charitable purposes only, which conducted the sanatorium and which the evidence showed exercised reasonable care in selecting Dr. Warner, could not be held responsible for his negligence. The same rule applies when the plaintiff pays for the services rendered, where the amount received is not for private gain, but to accomplish more effectually the purposes for which the charity was founded.

Manslaughter in Death from Unlawful Administration of Morphin to Alleviate Pain

(Silver vs. State (Ga.), 79 S. E. R. 919)

The Court of Appeals of Georgia holds that when a person, in violation of the statute, administers morphin by means of a hypodermic syringe to another in such quantity as to cause death, he commits an unlawful act, and a conviction of involuntary manslaughter in the commission of an unlawful act would be authorized. It is no defense that in the administration of the drug the intent was not to cause death, but to alleviate pain. Whether or not the administration of morphin is an act evil in itself would, of course, largely depend on the amount and the circumstances under which it was administered. Administration in small amounts and to alleviate pain might be construed as a beneficent act, but administration without this purpose, or to one who habitually uses it, might well be considered a wrongful act. However this may be, under the Georgia statute the administration of morphin in any quantity or for any purpose, except under prescription as provided by the statute, is unlawful, and the penal code declares that "involuntary manslaughter shall consist in the killing of a human being without any intention to do so, but in the commission of an unlawful act." The administration of morphin without a prescription being unlawful under the state statute, it follows that when death ensues from such unlawful administration of morphin, the person so administering the morphin is guilty of involuntary manslaughter in the commission of an unlawful act.

Presumption that One Is Not a Physician

(Miller vs. State (Miss.), 63 So. R. 269)

The Supreme Court of Mississippi, in affirming a judgment of conviction of the appellant Miller of unlawfully selling cocain, says that his complaint was that the state failed to prove that the person to whom the sale was made was not a regular licensed physician or dentist, and that the sale was not made on a physician's prescription. If the sale was made on the prescription of a physician, that fact lay peculiarly within the knowledge of the defendant, and consequently, it devolved on him, and not on the state, to establish it.

There was no direct evidence that the negro boy to whom the sale was made was not a physician or dentist; but the presumption was that he was neither, and therefore, if he was a physician or dentist, it devolved on the defendant to prove it. The state withholds from the mass of the people the right to practice the professions of medicine and of dentistry, and grants it only to exceptional persons, of every one of whom it is certainly true that at one time he was not allowed to practice as such. There was here, therefore, a double prima facie presumption: first, that the person to whom this sale was made did not belong to the exceptional class of persons to whom the right to practice medicine or dentistry had been given; and, second, that as at one time he had no such right he has none now.

Society Proceedings

COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, ATLANTIC CITY, JUNE 22-26.

Missouri Valley Medical Association, Lincoln, Neb., Mar. 26-27.

NATIONAL CONFERENCE ON RACE BETTERMENT

Held at Battle Creek, Mich., Jan. 8-12, 1914

(Concluded from page 569)

The Negro Race

MR. BOOKER T. WASHINGTON, Tuskegee, Ala.: Few races in history have been subjected to so many sudden, violent and trying changes as has the American negro. There was the transition from Africa to America, from free life to slave life, and then from slave life to free life. Then there has been the change which a large proportion of the race has experienced of moving from the South into the North. In spite of all these changes the negro has lived and is living and intends to live. The white race must be a little patient with the negro, because he is trying to readjust himself to all the physical, industrial, social and moral conditions. The negro is worth saving. In order to be most helpful to it, the white race should try to keep most of the negro race in the country districts, out of contact with large, complex city life. The next thing is to keep whisky away from my race. I have observed the effect of the use of liquor on my people, and I have no hesitation in saying that it should be kept from them. I would also ask you to use your influence to keep patent medicines away from my race. These three things will help my race. The two races are going to stay in this country; we are going to help or hinder you, and we wish you to help us to get to the point where we can help you.

Community Hygiene

REV. CAROLINE BARTLETT CRANE, Kalamazoo, Mich.: No community lives unto itself. Community hygiene may depend in no small part on the neighboring but unneighborly community. A proper division of the function and proper functioning in each division of public-health work is of vital concern to every community. Each community must not only do its own part, but must also maintain a partnership with other communities under the supervision of the state which granted the municipal corporation all the rights and privileges which it possesses, and which may naturally be looked to to maintain cooperation between these corporations. And states may naturally expect the national government to act strongly in behalf of the general welfare.

The Health Certificate—A Safeguard Against Vicious Selection in Marriage

DEAN WALTER T. SUMNER, Chicago: We guard our business with a great deal of care. If a group of men desire to form a partnership they must secure permission from the legislature; if a man or a group of men desire to carry on a municipal trade they must secure a license; if a man in the city of Chicago desires to carry on only an insignificant street trade he must vouch for his responsibility at the city hall. If this same man desires to marry he goes down to

the city hall alone and gets a license. He may be a degenerate or an epileptic, or the diseases of the social evil may be coursing through his veins. These people are allowed to marry and propagate their kind, and to pass on to succeeding generations the physical, mental and moral deficiencies which they possess. We are giving much time and attention to the question of environment. We should give much attention to nurture. In face of the fact that we safeguard marriage or selection in marriage by no laws and by no public attention, is it strange that we have in our public institutions three million abnormal people, costing this nation two hundred million dollars a year for their care, and that they are increasing far and beyond the proportion of the increase of the population in this country, large as that increase is? The demand for a health certificate before marriage will come about by legislation, and this is effective just as it is backed up by public opinion. Public opinion to-day is not well informed with regard to the need of safeguarding marriage selection. Education of the public is the great hope, and the greatest agent for education in this country to-day is the press.

The Relation of Physical Education to Race Betterment

DR. D. A. SARGENT, Cambridge, Mass.: In nearly all the countries of the world there is a steady decline in the birth-rate. The most prosperous communities, even in our own country, are not reproducing a native population equal to the death-rate, and in some of the towns of New England the death-rate actually exceeds the birth-rate. If it were not for the influx of foreigners and those born in rural communities our great towns and cities would soon be depopulated. Some of the causes of this are: (1) poverty and inability to support a family of children; (2) luxurious living and the indisposition to take on the cares and responsibilities of reproduction; (3) living in apartments and communities where children are often regarded as a nuisance; (4) the preoccupation of both sexes with professional work; (5) love of ease, sports and amusements and the selfish gratification of all the senses; (6) inability from lack of health, or the possession of a bad inheritance. Physical education can bring the hereditary weakling up to par. An increasing number of the better classes in America are awakening to the importance of having more children and giving them a physical as well as mental training.

Factory Degeneration

REV. NEWELL DWIGHT HILLIS, Brooklyn: The recognition of the deterioration of our factory people has been recognized for many years. The cure rests on the reform of industrial conditions. It all rests with the woman who can rear a healthy baby. The only cure for the factory-class degeneration in this or any other country is rebuilding of factory-class civilization.

The High Cost of Living As a Factor in Race Degeneracy

DR. J. N. HURTY, Indianapolis: The high cost of living has a bearing on race degeneracy. If we could raise the price of diseased meats and whisky so high that they could not be bought, that would be an advantage. We place too much faith on the doctor and on medicine. We think that medicine can undo the wrong that we have done the body. It can only repair. It cannot remedy or remake. We must have medicine, but we must view it from a different angle. We are obsessed with the idea of cure. To eradicate from men's minds the idea that they ever can experience perfect cure after disease or injury would do a great deal of good. When we attempt to tell people that they must not get sick, and that getting sick is weakness, they go to the next doctor, who will give them a drop of medicine. Let us get away from that idea.

Tobacco a Race Poison

DR. DANIEL LICHTY, Rockford, Ill.: Tobacco is a narcotic poison; every part of the plant is poisonous, and only a few poisonous plants excel it in deadliness. Eighty per cent. of the adolescent and adult male population are enamored of its potency. Man by the excessive use of tobacco makes himself a member of the human scrap-heap. Narcotic indulgence means race degeneration. Tobacco-using is drug slavery. Tobacco, alcohol and syphilis leave the same scar on progeny.

Some Suggestions for a More Rational Solution of the Tuberculosis Problem in the United States

DR. S. ADOLPHUS KNOPF, New York: In spite of all efforts, 200,000 people are dying annually from tuberculosis in the United States. Of these, fifty thousand are tuberculous children. Estimating the average age of these fifty thousand children dying annually from tuberculosis at about 7½ years, and figuring the cost to parents and the community for each life as only $200 per annum, the financial loss thus represented is $75,000,000. These children have died before they have been able to give any return to their parents and the community. Twenty million children attend public schools in the United States, of whom 600,000 are in need of open-air instruction or sanatorium treatment. We can at present provide for about 2,000 of these tuberculous children.

The 150,000 adults who die annually of tuberculosis have been incapacitated for at least two years. At $1,000 per year, this would mean $300,000,000 uselessly spent in caring for people afflicted with a disease that might be prevented. Unless we make the cure of the disease lasting by judicious after-care, the money spent for sanatorium maintenance is a loss.

There should be a sufficient number of public parks and playgrounds in our great cities to counteract congestion and reduce it to a minimum. Medical schools should give special courses in the early diagnosis of tuberculosis. The man advertising fake consumption-cures should be treated as a dangerous criminal, for such he is. There should be state insurance against tuberculosis. The influx of tuberculous immigrants liable to become a burden to the community should be prevented by compelling all steamship companies to assure a clean bill of health for every immigrant brought to these shores, and to insure every immigrant against tuberculosis. Procreation of the tuberculous should be prohibited by law and the prevention of it taught to every tuberculous adult. Predisposing factors to tuberculosis, such as child labor, sweat-shop labor, too long working hours for both men and women, and bad housing conditions in tenements, apartments, lodging-houses and hotels in city and country must be combated by rational laws and their strictest enforcement. The same rigor should be applied to laws concerning proper ventilation and sanitation in workshops, factories, stores and public conveyances.

The Importance of Frequent and Thorough Medical Examination of the Well

DR. VICTOR C. VAUGHAN, Ann Arbor, Mich.: Our country has a population of nearly one hundred millions. Millions of these are decent, respectable citizens—not altogether wise, but for the most part well-informed. Thousands are brutal in their instincts, criminal in their pursuits, and breeders of their kind. We assert that we are civilized, but there are those among us who would be stoned to death within less than twenty-four hours were they to attempt to live in a savage tribe. Decay and death come with advancing years. Those possessed of strength and health must bear the burden of those afflicted with poor health. The world has seen what has been done in Havana and the Canal Zone, where the most pestilential spots have been converted into healthful habitations. Scientific investigation has made these demonstrations, and the world applauds, but seems slow to make general application of the rules of hygiene. I look forward with confidence to the time when preventable diseases will be prevented, and when curable diseases will be detected and treated while curable.

The Effect of Alcohol on Longevity

MR. ARTHUR HUNTER, New York: Alcohol in moderate quantities is a food, but a very dangerous food. Even small doses of alcohol have a detrimental effect on muscular power. There is little doubt of the degenerating influence on the mental processes produced by alcohol, even in small quantities. The true way to determine the effect of alcohol is to find out how lives are shortened by the use of it. The insurance

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companies are completing an enormous investigation involving something like two million lives, to obtain information to enable them to elect risks with greater care, and also to charge extra premiums. This investigation is being carried on by forty-three life-insurance companies. In order to determine the effect of alcohol we must have some standard of measurement.

Alcohol—What Shall We Do About It?

DR. HENRY SMITH WILLIAMS, New York: I have no objection to alcohol as such—it has almost the formula of sugar. But what I object to is its effects on the brain, mind and morals of the people. The greatest dangers of alcohol are to the adolescent, and we should make it as nearly impossible as we can for the youth to secure it.

Effect of Philanthropy and Medicine on Race Progress

MR. LEON J. COLE, Madison, Wis.: The laws of heredity that are operative in the lower animals are also operative in man. Which is the more important—environment or heredity? Biologists agree that results which are the effect entirely of environment are not inherited, but other conditions, environmental conditions, may affect the germ-plasm. What we mean by saying that environmental conditions are not inherited is that they are not inherited in any specific sense. It has long been believed by the medical man that alcohol has directly a deleterious effect on the offspring. Recent experiments have shown that alcohol, lead and certain other poisons may directly affect animals so that their germ-cells are weakened. This is not a specific inheritance. It is simply a weakening of the germ-plasm. It is possible that other toxins, the toxins of certain diseases, may have a similar effect on the germ-plasm, but I wish to emphasize the certain fact that this is not a specific effect. It is a general deteriorating effect on the germ-plasm, and as a result of it defective animals are born, which is also probably the case in man. It is the work of the biologist and medical man to learn of the method of inheritance of these things, and of the method of control, and, finally, I think that mankind is going to accept those things which are easiest and compatible with ideals. These methods cannot go contrary to ideals. Medicine must go ahead in the course that it has, and charity must go ahead in the course that it has, but in both these lines we must have an eye to the future. In later years medical science has turned its attention so much toward preserving life that it has given very little thought as to what it was doing to the race as a whole.

The Function of the Dentist in Race Betterment

DR. C. N. JOHNSON, Chicago: To better the race, we must better the individual by adding to his physical, mental and moral efficiency. The condition of the teeth has much to do with the health of the individual. A poorly nourished body must result in inefficiency, the result of decayed teeth is inefficient mastication, without mastication we cannot have good digestion, without digestion we cannot have assimilation, and without assimilation we cannot have nourishment. It may seem a far cry from defective teeth to delinquency, but it is a logical sequence. There is a very real danger to the individual and the community as the result of defective teeth and broken-down roots left in the jaws. Ninety per cent. of schoolchildren have decayed teeth. Our boards of health should give attention to this.

Public Repression of the Social Evil

MR. GRAHAM TAYLOR, Chicago: We can estimate the magnitude of the social evil from the diseases which come directly from it into our hospitals, in hospitals for the blind, in institutions for the feeble-minded, in infirmaries and insane asylums, and that gruesome, never-ending procession of delinquents through our police-stations and courts. We can estimate the financial investment in commercialized vice, the forms those investments take, the profits that are made, the blackmail that is levied, the bribery of public officials, which is well known, mounting up into millions in our large cities. But the half is never told.

Segregation

DR. HASTINGS H. HART, New York: Thousands of the insane are put into jail to "protect the community from danger"—but not one in ten is dangerous. More than half the children coming into reformatories are in need of medical or surgical treatment. It is less than six years ago that an investigation of the Lancaster School showed that probably 28 per cent. of all the girls there were subnormal. That led to an examination of other similar institutions, and now the fact is generally accepted that in our prisons and reformatories at least 25 per cent. of the inmates are defectives; among our juveniles from 25 to 50 per cent., and in one institution where a psychologist was employed to examine the girls, 65 per cent. were feeble-minded. These girls do not need reformatory treatment. They need to be out in the open, have fresh air, have recreation, have a good time. There are a multitude of feeble-minded in the hospitals for the insane, and we are spending 50 per cent. more for their care than necessary. We no longer build asylums for the deaf and blind, but we build schools for them and educate them to become self-supporting citizens. The most important care of the community is the custodial care of the feeble-minded girl who is perpetuating and multiplying her kind, and she is twice as prolific as the normal woman. All the insane are being taken care of, but not the feeble-minded, and the latter are twice as dangerous. I do not know of any one who is more deserving of care than these girls of 16, 17 and 18, who have the mind of children of 7 or 8 and the body of women, who are pursued and hunted down and destroyed like rabbits.

Relation of Eugenics and Euthenics to Race Betterment

DR. RICHARD M. METCALF, Oberlin, Ohio: We must promote the gathering and safe filing of human-inheritance records, which in the future will serve as the foundation of such practice of eugenics as shall prove wise and practical. Among the great needs must be recognized scientific study of the principles of inheritance. Marriage of certain individuals is unsatisfactory. To what extent the state can intervene to prevent such marriage is a question which needs careful study.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Albany (N. Y.) Medical Annals

February, XXXV, No. 2, pp. 49-114

1 Tuberculosis Sanatorium as Department of General Hospital and Its Educational Responsibilities. E. Corning, Albany.
2 Study of Therapeutic Effects of Thermo-Penetration in Treatment of Phthisis Pulmonalis. H. Van Rensselaer, Albany.
3 *Use of Scarlet Red in Treatment of Tuberculous Laryngitis. E. Corning, Albany.
4 Treatment of Tuberculous Laryngitis with Scarlet Red. E. E. Hinman, Albany.
5 Pneumothorax, with Report of Three Cases. M. Douglas, Albany.
6 Albumin Reaction in Sputum of 228 Cases of Pulmonary Tuberculosis. E. Corning, Albany.
7 Treatment of Night Sweats. W. M. Adams, Albany.
8 Weight Records of First One Hundred Nurses at Albany Hospital Tuberculosis Sanatorium. E. Corning, Albany.

3. **Scarlet Red for Tuberculous Laryngitis.**—Hinman uses an ointment, whose base is equal parts of sesame oil and petrolatum, with a dye strength of 10 per cent., and this is applied twice daily to the larynx. The drug is said not to be irritating and the applications are not distressing. Thus far he has not observed anything of a toxic nature, or, in fact, any untoward symptoms. The first and most surprising result obtained was a very prompt relief of pain. This was noted in every case in which pain had been present. It was reduced in all cases and in some entirely relieved, so that patients were able to eat and drink with comfort. In all cases but two, both of which were far advanced before treatment was instituted, and both patients dying very soon after, ulcerations showed a tendency to heal. The general laryngeal congestion of several cases soon subsided and the hoarseness improved. A few patients presented only infiltrations and

edema. After a few weeks of this treatment with scarlet red the swelling grew markedly less.

Hinman directs attention to the fact that they were the more incipient cases and that they improved generally during this time and therefore the local improvement may have been as much due to the general betterment as to the local effect of the dye, but it is reported because it is very possible that this drug may be shown to have some selective action through the unbroken mucous membrane. As yet all of Hinman's investigations and observations have been from the clinical standpoint and therefore the pathologic findings are not reported. Two patients who presented extensive ulcerative lesions of the larynx when they were admitted have since died. In one there was a decided lessening of pain and some improvement in the ulceration prior to his death, the other patient died shortly after beginning treatment, before results could be expected.

American Journal of Anatomy, Philadelphia

January, XV, No. 4, pp. 389-516

9 Development of Cytoplasmic Constituents of Nerve Cells of Chick. E. V. Cowdry, Baltimore.
10 Feeding Experiments on Tadpoles. J. F. Gudernatsch, New York.
11 Origin and Early History of Primordial Germ-Cells in Chick. C. H. Swift, Chicago.

American Journal of Diseases of Children, Chicago

February, VII, No. 2, pp. 97-168

12 *Bacteriologic Diagnosis and Treatment of Alimentary Disease in Infant and Child. R. Vincent, London, Eng.
13 Pellagra in Early Childhood. W. Weston, Columbia, S. C.
14 Spasmophilia with Special Reference to Familial Reaction and Repeated Absences: Report of Sixteen Cases. J. P. Sedgwick, Minneapolis, Minn.
15 *Value of Blood Picture in Early Diagnosis of Measles, Especially in Relation to Question of Isolation. W. P. Lucas, San Francisco.

12. **Alimentary Disease.**—Vincent is convinced that by means of the bacteriologic examination of infants' stools he has arrived at a means of diagnosis which in respect to accuracy and precision is far superior to any other means. While the direct microscopic examination is most important and should never be omitted, it is not solely relied on. For the complete examination Vincent requires to determine the organisms that are dominant, by observing which of them appear when a portion of the dejection is transferred by means of the platinum loop to sterilized milk. Milk is the chief culture medium systematically employed.

Quite apart from specific treatment, the bacteriologic diagnosis influences the conduct of the case. In dealing with an intestinal condition due to dominance of the acid-forming organisms, the first line of treatment is the exclusion of all diet calculated to assist the lactic organisms. Raw milk must be forbidden. Cooked milk with the lactose reduced to a minimum amount is indicated. In such cases a reasonable amount of fat and a considerable amount of protein in the shape of caseinogen may be given. If this be given in the shape of milk the lactose may still be too much, and one may therefore employ a precipitated casein. In these cases chalk may be useful in contending with the excessive acid, and opium in minute amounts in the case of the young infant may be useful in calming the irritated intestine.

A favorite preliminary treatment in these cases at the Infants' Hospital is albumin water made with normal saline, termed "saline albumin." With this are combined a few teaspoonfuls of a diluted meat extract, while small doses of brandy are given at intervals. Opium is also given in small doses. Very gradually a normal milk diet is introduced, but throughout the treatment the dietetic and medicinal treatment is constantly checked by examination of the dejections. The precise treatment of the conditions arising from dominance of the colon organisms depends a great deal on the age of the infant. In the young infant—under 6 months, and particularly under 4 months—the intestinal conditions are rather apt to undergo very rapid changes. In a moderate case of colon toxemia where the constitutional symptoms are not severe, it is a mistake to undertake too active treatment with a view to the rapid suppression of the dominant organisms. As a rule treatment with cultures of the lactic organism is not indicated. It is better to adopt measures favoring the gradual development of the lactic organisms by dietetic management than by the administration of pure cultures. If the case is obstinate and the colon dominance persists despite the administration of raw milk containing a good proportion of lactose, then the administration of cultures is indicated. According to Vincent's observations, children fed on boiled milk are more liable to contract tuberculosis, and especially the more serious forms of tuberculosis, than children fed on raw milk, and he believes the reason for this is the chronic toxemia resulting from the proteolytic action of the colon bacilli.

15. **Measles.**—A further examination of measles patients has confirmed Lucas in the belief that there is an early change in the blood picture which may be taken as the first evidence of the infection. This consists in a change from the ordinary lymphocytic predominance which exists normally in infants' blood, to a relative increase in the percentage count of the neutrophilic type of cell. Though there is an actual diminution, here also the diminution in the lymphocytes far exceeds that of the neutrophils, so that there is a complete reversal of the blood picture. The normal percentage of lymphocytes in infants' blood ranges from about 55 to 70 per cent. of the white blood-cells; whereas the neutrophils range from about 25 to 30 per cent., the large mononuclear cells ranging from about 8 to 15. The earliest sign which appears in the blood of an infant coming down with measles is a beginning reversal of this picture. The reversal usually begins about a week before any visible symptoms of infection occur. The actual reversal has occurred at least forty-eight hours before the earliest signs are visible, that is, Koplik spots, coryza or coughing. There is also a definite constant leukopenia present which sometimes appears eight days before the physical signs, and sometimes appears simultaneously with the physical signs. For this reason it is not so reliable a diagnostic method as the cell picture, which is far more constant and reliable as a determining factor in making an early diagnosis.

There also appears an ever increasing number of disintegrated cells, which first make their appearance about the time the cell picture begins to change. These disintegrated cells may not be specific, and probably are not specific in measles; but with the reversal of the blood picture, they are to be counted as a definite factor in the early diagnosis. They appear to be in many instances large, swollen cells, with protoplasm breaking up, and the nucleus, as it were, waterlogged or breaking up into fragments. The shape varies from round to oval, with no sharply defined outline. Granulations are abundant, and they can be seen separating from the nuclei.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

January, I, No. 7, pp. 489-538

16 *Human Trypanosomiasis: Case Observed in Baltimore. J. A. Chatard and C. G. Guthrie, Baltimore.
17 Influence of Water-Borne Disease on Mortality of Children. A. J. McLaughlin, Washington, D. C.
18 Outlook for Dementia Praecox: Plaintiff's Plea. B. Holmes, Chicago.
19 Case of Long-Standing Amebic Abscess of Liver and Lung. A. Eustis, New Orleans.

16. **Human Trypanosomiasis.**—The patient was seen by Chatard and Guthrie during a relapse, when he presented practically the same symptoms as in his initial attack. The most pronounced symptom was depression, which was in marked contrast to the euphoric state present for a time after the administration of salvarsan. It is interesting that three of the signs most commonly present were absent in this case, namely, auto-agglutination of the red blood-cells, circinate erythema and deep hyperesthesia (Kerandel's sign). The findings on examination of the blood, cerebrospinal fluid and gland juice, as confirmed by the results of animal inoculation, are in accord with the observations of Todd and others as to the relative value of these diagnostic methods. The case is instructive in that treatment for nineteen weeks in the early stage of the infection sufficed to render the patient

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practically, or entirely, free from symptoms referable to the disease over a period of three years, but at the end of that time there was a relapse. The improvement apparent after a single dose of salvarsan was very striking. The fact that trypanosomes could not be demonstrated in the patient's blood, even by inoculation of susceptible animals, made Chatard and Guthrie feel that the danger from this source was minimal. Practically, the experience with imported cases elsewhere has shown that the disease is self-limited in the absence of the intermediate host.

Boston Medical and Surgical Journal

February 5, CLXX, No. 5, pp. 185-220

20 Program of Practical Measures for Mental Hygiene Work. H. R. Stedman, Brookline, Mass.
21 Control of Chest Percussion by Means of Roentgen Ray. G. C. Shattuck, Boston.
22 Relation of Foot and Leg Muscles to Statics of Body. C. L. Lowman, Los Angeles.
23 Chronic Malarial Cachexia and Its Relation to Neurasthenoid Conditions. C. Pope, Louisville.
24 Case for Radium Therapy. S. Delano, Boston.
25 Study of Cancer. S. W. Little, Rochester, N. Y.

Bulletin of Johns Hopkins Hospital, Baltimore

February, XXV, No. 276, pp. 33-68

26 *Intestinal Obstruction: Formation and Absorption of Toxin. D. M. Davis, Baltimore.
27 *Natural Immunity of Animals Against Poison of Intestinal Obstruction. D. M. Davis and H. S. Morgan, Baltimore.
28 Niels Stensen. W. S. Miller, Madison, Wis.
29 Brief Historical Sketch of Some Early Studies of Finer Structure of Plant and Animal Tissues. R. M. Pearce, Philadelphia.
30 Early History of Care and Treatment of Cripples. D. C. McMurtrie, New York.

26. **Intestinal Obstruction.**—Davis claims that the duodenal and upper jejunal mucosa, unaided by bacterial action, and in conditions not far removed from normal, can produce a highly toxic substance, and that although phenolsulphonephthalein is readily absorbed by the normal mucosa of the small intestine, this toxic substance is not. In closed loops one deals with a mucosa which displayes nothing more than a slight hyperemia, sometimes not even that. Injuries from handling are negligible, and absence of normal secretions from above is readily excluded as a cause of the mischief. Loop contents themselves in concentrated form will not stimulate absorption of toxin from the lumen in a freshly made loop. It seems clear, then, that some condition existing in closed loops causes slight but important functional changes in the mucosa, resulting in fatal toxemia. In obstruction and closed loops, a subtle change takes place in the mucosa—nothing is seen with the microscope, yet the cells in some manner discharge, or allow to be discharged, the fatal toxin into the blood. Davis has found it impossible up to the present to demonstrate any increased permeability of the mucosa to the toxic substance.

27. **Natural Immunity of Animals against Poison of Intestinal Obstruction.**—To Davis and Morgan, their experiments remain rather inconclusive. But, they state, it is safe to say that closed loop toxin cannot readily be neutralized by autolysates of normal cat organs, as it can by autolysates of immune dog organs. They advise that great care must be exercised in interpreting the results obtained by introducing supposedly toxic intestinal material into animals of various species. Cats will survive two to six days after the production of closed duodenal loops, often dying of peritonitis. The contents of these loops after heating and filtration, will kill dogs, when injected intravenously, with the same symptoms and anatomic picture seen when dog loop contents are used. Cats are resistant to this toxic material, withstanding with ease doses of over twice as much per gram of body weight, as is necessary to kill dogs. Efforts to neutralize the toxin of duodenal loop contents by incubation with cat organ extracts, cat blood and cat serum, have been unsuccessful. Rabbits and guinea-pigs are much less suitable for testing the toxicity of intestinal fluids than dogs, owing to their great susceptibility to hurtful influences of all sorts. Cats are also less suitable for the same purpose than dogs owing to their high natural immunity against closed loop toxin.

Iowa State Medical Society Journal, Washington

January, III, No. 7, pp. 411-466

31 Method of Tonsillectomy by Means of Alveolar Eminence of Mandible. C. A. Gundelach, St. Louis.
32 Contracted Pelves in Obstetrics. J. R. Condon, Des Moines.
33 Significance of Heart Murmurs. J. R. Walker, Ft. Madison.
34 High Blood-Pressure. W. H. Rendleman, Davenport.
35 Vaccine and Serum Therapy. J. W. Shuman, Sioux City.
36 Fractures in Children. L. Schooler, Des Moines.

Journal of Biological Chemistry, Baltimore

February, XVII, No. 1, pp. 1-98

37 Researches on Purines. C. O. Johns, New Haven, Conn.
38 *Protozoan Protoplasm as Indicator of Pathologic Changes. III. In Fatigue. F. P. Underhill and L. L. Woodruff, New Haven, Conn.
39 *Cholesterol Content of Cancers in Rats. C. B. Bennett, San Francisco.
40 *Determination of Creatine in Muscle. L. Baumann, Iowa City, Ia.
41 Absence of Sugar in Urine after Pancreatectomy in Pregnant Dogs Near Term. A. J. Carlson, J. S. Orr and W. S. Jones, Chicago.
42 *Influence of Pregnancy and Castration on Iodin and Phosphorus Metabolism of Thyroid. F. Fenger, Chicago.
43 Resolution of Inactive Uramido-Acids and Hydantoins into Active Components and Their Conversion into Amino-Acids. H. D. Dakin and H. W. Dudley, New York.
44 Metabolism of Endogenous and Exogenous Purines in Monkey. A. Hunter and M. H. Givens, Ithaca, N. Y.
45 Nitrogen Excretion of Monkey. A. Hunter and M. H. Givens, Ithaca, N. Y.
46 Relative Intolerance of Sheep to Subcutaneous Administration of Glucose. A. Hunter and R. L. Hill, Ithaca, N. Y.
47 Determination of Creatinine and Creatine in Muscle. V. C. Myers and M. S. Fine, New York.
48 Partial Enzymatic Hydrolysis of Yeast Nucleic Acid. W. Jones and A. E. Richards, Baltimore.
49 Osmotic Properties of Adductor Muscle of Clam—Venus Mercenaria. E. B. Meigs, Philadelphia.

38. **Fatigue and Growth.**—The authors found that extracts prepared from fatigued muscles produce no change in the division rate of Paramecium as compared with that obtained with extracts of normal muscles. Inasmuch as it has been demonstrated that paramecia are capable of detecting chemical changes, for example, in nephritis and in carcinoma, they believe it is justifiable to conclude that the character of the chemical changes occurring in fatigued muscle must differ only slightly from the normal.

39. **Cholesterol Content of Cancers in Rats.**—The strain of cancer used by Bennett was the Flexner-Jobling rat carcinoma. The cholesterol was not injected into the cancers, but was placed subcutaneously in the other side of the animals. Each rat received, repeatedly, 1 c.c. of a 2 per cent. solution of cholesterol in sodium oleate. Nine or ten injections were made during a period of about three weeks. It was soon found that a direct comparison between the injected and uninjected rats was impossible owing to the fact that there was considerable individual variation among those treated exactly alike.

The following deductions, however, seem to Bennett to be indicated by the findings: (1) The injection of cholesterol into rats does not very markedly affect the cholesterol content per gram of cancer tissue. (2) The cholesterol content of cancers increases with the age of the cancers, a fact of some interest when it is remembered that Wacker found the same thing true for normal tissues. (3) The outside, or actively growing part of the cancer, contains less cholesterol than the central portion. (4) If two cancers are of the same age, that one which is very markedly the smaller is apt to contain more cholesterol per gram of tissue, probably because it contains much less actively growing tissue.

40. **Determination of Creatin in Muscle.**—The method proposed by Baumann is carried out as follows: 50 gm. of hashed muscle are weighed into a round-bottom, short-necked Jena flask; to this 125 c.c. of fifth-normal sulphuric acid, and a few chips of unglazed porcelain are added and the whole boiled for three hours under a reflux condenser. At the end of this time the muscle is disintegrated. The solution is now filtered quantitatively through a 15-cm. filter paper into a 250-c.c. volumetric flask, the residue (less than 2 grains of dry material) is washed thoroughly with distilled water, the fluid is cooled and the flask filled to the mark. Twenty cubic centimeters of the claret-colored extract are

pipetted into a small porcelain dish (8.5 cm. in diameter) and 18 c.c. of 10 per cent. sodium hydrate are added while stirring. The partially neutralized fluid is then evaporated on the water bath to about 10 c.c. and transferred quantitatively to a 50-c.c. volumetric flask containing 30 c.c. of saturated aqueous picric-acid solution (the solid particles adhering to the sides of the dish are of no consequence provided the washing has been thorough). The flask is filled to the mark with distilled water when its contents have reached the proper temperature, shaken vigorously, then filtered through a dry filter-paper.

To 25 c.c. of the clear filtrate 6 c.c. of the 10 per cent. sodium hydrate are added and the creatinin determined colorimetrically according to Folin, allowing ten minutes for the color to develop. The standard is a creatinin solution containing about 7 mg. of creatinin per 10 c.c. of solution. It may easily be prepared by heating pure anhydrous creatin (about 80 mg.) with 50 c.c. of fifth-normal sulphuric acid for three hours under a reflux condenser, then diluting at once in a volumetric flask to 100 c.c. The titer of this solution remains constant for months.

42. **Iodin and Phosphorus Content of Thyroid.**—While female animals contain more thyroid tissue and iodin in thyroid combination per unit of body weight than male animals, Fenger says that there is no apparent difference in size and physiologic activity between glands from pregnant and non-pregnant female animals, and the increased iodin metabolism of the fetal glands, both male and female, seems therefore to be independent of the maternal glands, having in common only the source of the iodin. Castrated males contain less thyroid tissue than either uncastrated males or females, but the iodin content per unit of body weight is about half way between the uncastrated male and female animals. The phosphorus content of the thyroid seems to be fairly uniform in all four cases and should only be considered an indication of normal physiologic activity. The garlic-like odor observed in all four lots of glands is due directly to the comparatively large amounts of iodin present and furnishes evidence of a chemical reaction specific to the thyroid and resulting in an organic complex possessing the characteristic odor of oxidizing phosphorus. The odor was observed before the death of the animals, indicating that the reaction actually takes place during life.

Journal of Cutaneous Diseases, New York

January, XXXII, No. 1, pp. 1-110

50 Anatomy of Patch of Seborrheic Keratosis. D. W. Montgomery, San Francisco.
51 Classification and Description of Cutaneous Epitheliomas. J. E. R. McDonagh, London.
52 Case of "Ringworm Yaws" in Barbadian Negro. H. C. Clark, Ancon, C. Z.
53 Histologic Studies in Some Types of Skin Tuberculosis. J. A. Fordyce, New York.
54 Arthropathy in Secondary Syphilis. U. J. Wile, Ann Arbor.

Journal of Experimental Medicine, New York

February, XIX, No. 2, pp. 129-222

55 Behavior of Elastic Tissue in Post-Fetal Occlusion and Obliteration of Ductus Arteriosus (Botalli) in Sus Scrofa. J. P. Schaeffer, New Haven.
56 *Survival and Transplantability of Adult Mammalian Tissue in Simple Plasma. A. J. Walton, London.
57 *Intestinal Obstruction: Defensive Mechanism of Immunized Animal Against Duodenal Loop Poison. G. H. Whipple, H. B. Stone and B. M. Bernheim, Baltimore.
58 Idem: Mechanism of Absorption from Mucosa of Closed Duodenal Loops. G. H. Whipple, H. B. Stone and B. M. Bernheim, Baltimore.
59 Studies in Tissue Specificity: Ultimate Fate of Mammalian Tissue Implanted in Chick Embryo. Jas. B. Murphy, New York.
60 *Function of Spleen in Experimental Infection of Albino Mice with Bacillus Tuberculosis. P. A. Lewis and A. G. Margot, Philadelphia.
61 Epidemiology of Poliomyelitis. S. Flexner, P. F. Clark and H. L. Amoss, New York.
62 *Etiology of Epidemic Poliomyelitis. H. L. Amoss, New York.
63 *Intraspinous Infection in Experimental Poliomyelitis. P. F. Clark and H. L. Amoss, New York.

56. **Adult Mammalian Tissue in Simple Plasma.**—The total number of cultures made by Walton in the present investigation was 147. Of these 115 showed growth in the first culture, the remainder probably having died owing to some technical error, as they were mostly isolated specimens in a series of six made from the same tissue and under identical conditions. Of thyroid 13 cultures were made, being taken in groups of 6, 3 and 4 from different animals on different dates. Of these 13 cultures only 9 grew, but these when subcultured continued to grow until the third or fourth generation. The specimens from the first animal grew well until the tenth generation, but after this they died suddenly. Of spleen, 68 cultures were made from 12 different animals, being taken in 10 groups of 6 each, 2 groups of 3 and 1 of 2. In all cases growth was present in the first culture, the growing cells being mainly round and wandering cells. After the first transference 34 only showed signs of growth. Of the 43 resulting cultures of the third generation 18 alone showed growth.

In the fourth generation only four pieces of tissue showed evidence of growth, and in all cases this was very slight. Of testicle, 18 cultures were made. Growth occurred in 14 in the first culture. In the second generation the cells grew well and as usual more rapidly and extensively than in the first culture. For the third culture growth had become so marked that seven pieces were divided into two, resulting in 16 cultures of the third generation. Of these only 8 grew, but they showed extensive and rapid outgrowth of cells.

Of kidney 32 cultures were made. Of these only 15 showed growth in the first culture. In the second generation 11 showed growth. The 11 growing tissues were subcultured, but growth took place only in 3. In no case was growth obtained in the fourth generation. Of liver 14 cultures were made. In 9 of these there was active growth. In the second generation evidence of commencing growth was seen in three specimens after twenty-four hours. In the other 6 there was no evidence of growth. In 1 case only in the 3 specimens of the third generation was any growth observed, and this was only slight.

57. **Intestinal Obstruction.**—The series of experiments reported by the authors, they believe, provided conclusive evidence that a definite intoxication occurs in animals with closed loops, and that the intoxication is due to absorption of the loop poison. There are good reasons for believing that the intoxication seen in cats and dogs with intestinal loops and in human intestinal obstruction is due to the same poison or a similar one. It is noteworthy that a dog recovering from simple obstruction showed little evidence of intoxication when a closed duodenal loop was established.

Other evidence will be brought forward later by the authors to show that dogs with simple intestinal obstruction begin to acquire a certain immunity to the intoxication which will protect them against a closed-loop intoxication or the intravenous injection of duodenal loop fluid. They hold that the poison is elaborated by the mucosa, for when the mucosa is destroyed no poison is formed. They feel that their experiments give adequate basis for the belief that intoxication is the essential factor in intestinal obstruction or in the closed duodenal loop complex, and that the intoxication in the two conditions is similar if not identical, and the perverted activity of the mucosa, not an anatomic injury, is responsible for the formation of the poison. The cells and organ extracts of immunized animals can destroy the duodenal loop poison which is so resistant to simple digestion. The destruction *in vitro* during autolysis is quite rapid and the resultant material is non-toxic.

The possibility that this immune tissue juice might be potent when given intravenously at once suggests itself. The authors admit that it is possible that the immune organ extract may destroy the poison *in vivo* and help to tide the animal over a period of acute intoxication. This point is being investigated at present.

60. **Function of Spleen in Experimental Infection.**—Infection of rats and mice with *Bacillus tuberculosis* (bovine type) Lewis and Margot found develops a splenic tumor as a typical lesion. Removal of the spleen from mice (albino) greatly increases their resistance to the infection. This increased resistance cannot be explained at present. The infection in the splenectomized mice tends to remain localized as contrasted

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with an almost septicemic type of disease which is usual in the normal animal. The animals of each group that live more than thirty days are apt to present typical exudative lesions. The removal of the spleen does not therefore grossly change what may be called the capacity of the body for exudation.

62. **Etiology of Epidemic Poliomyelitis.**—The globoid bodies, or minute micro-organisms, cultivated from the central nervous organs of human beings and monkeys that have succumbed to poliomyelitis, were detected by Amoss in the incubated brain tissues of infected monkeys in forms indicating post-mortem multiplication. He found that incubating the poliomyelitic tissues in kidney-ascitic fluid culture medium and then crushing them is a more certain method for obtaining cultures of the organism. Identical bodies have been detected by him in blood-films prepared on the twelfth day of the acute attack, from a paralyzed poliomyelitic monkey inoculated intraspinously. The same organism has been cultivated from the blood of a monkey that had received intravenously a large dose of a Berkefeld filtrate of poliomyelitic virus. No other micro-organisms were detected either in the sections of the brain or in film preparations of the blood. These observations tend therefore to confirm the etiologic relationship between the minute micro-organism and epidemic poliomyelitis suggested by the successful cultivation and inoculation experiments reported by Flexner and Noguchi.

63. **Intraspinous Infection in Experimental Poliomyelitis.**—By intraspinous injections of specimens of poliomyelitic virus of suitable virulence, Clark and Amoss cause infection regularly in *Macacus rhesus* monkeys. The virus passes from the subarachnoid spaces into the nervous tissues, in which it multiplies, and into the blood. The constant involvement of the pia-arachnoid membranes in poliomyelitis, even when no paralysis occurs, and the fact that infection can readily be produced by intraspinous inoculation, suggests anew that in the pathogenesis of poliomyelitis the interstitial tissue changes within the meninges, blood-vessels, and ground substance play a determining part. While the virus injected into the subarachnoid spaces can be demonstrated there by inoculation tests forty-eight hours after the injection, it can no longer be detected on the sixth day, at a time when the first symptoms of infection make their appearance. The failure of the cerebrospinal fluid from human and experimental cases of poliomyelitis to produce the disease when inoculated into monkeys is due to the fact that the virus is either fixed by the nervous tissues or passes into the blood.

Journal of Medical Research, Boston

January, XXIX, No. 3, pp. 367-530

64 Critical Review of Bacteriology of Human and Rat Leprosy. S. B. Wolbach and J. A. Honeij, Boston.
65 *Experimental Anaphylaxis in Labor. J. A. Kolmer, Philadelphia.
66 Extensive Pigmentation of Brain Associated with Nevi Pigmentosi of Skin. W. W. Maclachlan, Pittsburgh.
67 *Case of Malignant Rhabdomyoma with Multiple Metastases. A. M. Burgess, Montreal.
68 *Estimates of Cholesterol in Serum by Gravimetric and Colorimetric Methods. P. G. Weston, Warren, Pa.
69 *Giant-Cell Endothelioma of Gums with Observations on Formation of Giant-Cells in Same, and in Tuberculosis and Blastomycosis. R. C. Whitman, Denver.
70 Life Cycle of Hemogregarine Found in Monitor (Veranus Niloticus). S. B. Wolbach, Boston.
71 Histopathology of Fordyce's Disease. R. L. Sutton, Kansas City.
72 Differentiation of Streptococci; Preliminary Notes. C. Floyd and S. B. Wolbach, Boston.

65. **Experimental Anaphylaxis in Labor.**—In Kolmer's experiments labor in pregnant guinea-pigs at or near term was not influenced by the intravenous injection of relatively large doses of maternal pig serums collected just before and just after labor; nor by the injection of serums from young pigs removed at term by abdominal section and immediately after normal birth; nor by placental extracts and human placental serum. Subcutaneous administration of placental serum to eight pregnant women near term was without any effect on the uterus and with none or very slight effect on temperature, pulse and respiration. The theory of Heide regarding gradual sensitization of the mother by fetal toxins with onset of labor due to sudden intoxication with a large dose of fetal antigen and thus considering labor an anaphylactic process is not supported by experiments.

67. **Malignant Rhabdomyoma.**—Burgess' case is of interest in that it is evidence that the striated muscle-cell can give rise to tumors of extreme malignancy, which grow with great rapidity, metastasize generally and produce death in a comparatively short time. Another point of interest to which Burgess calls attention is the resemblance of the clinical and anatomic findings to those in cases of rapidly growing myeloblastoma (which are ordinarily known, in which they show a green coloration, as chloroma). The relatively high percentage of myeloblasts and myelocytes in the blood examined during life makes this resemblance especially striking. This appearance of myelocytes in the blood is apparently due to the general invasion of the bone marrow by the tumor, and is associated with the production of myeloblasts in the spleen. A third point worthy of attention is the fact that only after a very extended search was it possible to find tumor cells which had reached a sufficient degree of differentiation to enable them to be recognized as striated muscle-cells. This suggests the probability that many similar tumors pass unrecognized and that a certain proportion of those malignant neoplasms composed of rapidly growing undifferentiated cells, which are ordinarily called sarcoma or alveolar sarcoma by the pathologist, may in truth be malignant rhabdomyomas.

68. **Estimates of Cholesterol in Serum.**—Colorimetric and gravimetric determinations were made by Weston of (1) pure cholesterol, (2) impure cholesterol extracted from serum, and (3) impure cholesterol extracted from serum plus a known quantity of pure cholesterol. Known quantities of pure cholesterol subjected to the same process as that employed in the extraction of cholesterol from serum yielded 99.44 per cent. according to the colorimetric estimates and 108.56 per cent. by weight. Serum to which one milligram of pure cholesterol had been added to each cubic centimeter yielded an excess of one milligram per cubic centimeter according to the colorimetric method and an excess of 1.3835 milligrams by weight. In the seventeen experiments in which a known quantity of cholesterol was estimated by both methods the results obtained by colorimetric estimation were uniformly more accurate than the results obtained by weight.

69. **Giant-Cell Endothelioma of Gums.**—Myeloid or giant-cell sarcomas are divided by Whitman into two groups. The new group consists of tumors very closely resembling the true myeloid sarcoma, but which are clearly of endothelial origin. The giant-cell of this tumor is or may be an intravascular formation. Analogous processes of giant-cell formation occur in blastomycosis and in tuberculosis.

Kansas Medical Society Journal, Kansas City

January, XIV, No. 1, pp. 1-48

73 Perforating Ulcers, Gastric and Duodenal, in Vicinity of Pylorus. G. M. Gray, Kansas City.
74 *Study of Epilepsy Based on One Thousand Admissions to Kansas State Hospital for Epileptics. M. L. Perry, Parsons.
75 Trachoma. C. L. Zugg, Kansas City.
76 Relation of Pharyngeal Lymphoid Ring to General Health. H. C. Markham, Parsons.

74. **Epilepsy.**—Attention is called by Perry to a few points concerning the treatment of epilepsy noted from personal observation and experience. He says, that to be effective, systematic treatment should be begun early in the course of the disease and must be long continued. There are few diseases in which individual treatment is so important. Every case of epilepsy presents distinctive features which have a bearing on its proper and scientific handling. A very large number of patients will show temporary improvement under a change of treatment. In all head injuries a careful examination should be made for fractures of the skull and for evidence of depressed bone or meningeal hemorrhage. Any of these conditions calls for immediate operation as a prophylactic measure. All cases of jacksonian epilepsy should be operated on if seen early.

In long-standing due to cortical irritation and in chronic epilepsy from other causes little may be expected from intracranial surgery. As a routine measure, Perry says a search should be made for peripheral irritations to the nervous system and if any are found appropriate remedies either surgical or medical should be instituted for their relief. The attention should not be too strongly concentrated on merely checking the convulsive attacks, but it should be borne in mind that they are only symptoms of a general nervous disease.

There is no drug which of itself will effect a cure. Of all the drugs used in the treatment of epilepsy the bromin preparations are the most effective. The bromid of sodium is the most satisfactory as a usual thing. There is no advantage to be gained by combining a number of the bromids. Comparatively small doses of bromids usually yield better results on the disease as a whole than do large ones. Perry states emphatically that bromids should never be given except in proper doses determined for the individual case and where the patient is under the frequent observation of a physician. He is convinced that most of the disrepute into which the bromids have fallen in recent years is directly due to their indiscriminate and unscientific administration. Any form of medical treatment will be limited in its effectiveness unless reinforced by hygienic and dietetic regulations.

Kentucky Medical Journal, Bowling Green

February 1, XII, No. 3, pp. 93-130

77 Diseases and Pathology of Nasal Accessory Sinuses. E. Rau, Bowling Green.
78 Symptoms and Diagnosis of Diseases of Nasal Accessory Sinuses. S. G. Dabney, Louisville.
79 Treatment of Diseases of Nasal Accessory Sinuses—Surgically and Otherwise. J. A. Stucky and W. S. Stucky, Lexington.
80 *Prevention of Tuberculosis. D. S. Wilson, Louisville.
81 *Uterine Hemorrhage and Its Significance. R. C. McChord, Lebanon.
82 Secondary Puerperal Pathologic Conditions. J. K. W. Piper, Russellville.
83 Modern Methods of Infant Feeding. G. Fulton, Louisville.
84 *Puerperal Eclampsia; Cause and Treatment. E. Speidel, Louisville.
85 Buttermilk as Therapeutic Agent. E. L. Gowdy, Campbellsville.

80, 81 and 84.—Abstracted in THE JOURNAL, Sept. 20, 1913, pp. 989 and 900.

Lancet-Clinic, Cincinnati, Ohio

January 31, CXI, No. 5, pp. 129-156

86 Specialized Tissue of Heart with Reference to Normal and Abnormal Action. J. E. Greiwe, Cincinnati.
87 Some Phases of Kidney Surgery. H. J. Scherck, St. Louis.
88 Some Serious Eye Conditions Result of Intranasal and Nasal Accessory Sinus Disease. J. A. Stucky, Lexington, Ky.

Maine Medical Association Journal, Portland

January, IV, No. 6, pp. 1661-1704

89 Prophylaxis in Army. W. H. Wilson, U. S. Army.
90 Heroinism. P. K. Sellew, Brookline, Mass.
91 Medical Pilgrimage to Two Ancient and Extinct Medical Schools, Castleton, Vt. and Fairfield, N. Y. J. A. Spalding, Portland.

Medical Record, New York

February 7, LXXXV, No. 6, pp. 231-276

92 Treatment of Retrodisplacements of Uterus. W. M. Polk, New York.
93 Etiology of Mental Torticollis: Report of Case. L. P. Clark, New York.
94 *Bridge Splint Operation for Correction of Deformities of Nose. W. W. Carter, New York.
95 Hypophyseal Disease as Related to Diabetes Insipidus. D. B. Jewett, Rochester, N. Y.
96 Case of Scleroderma. A. J. Gilmour, New York.
97 Drug-Habit Menace in South. E. H. Williams, Montclair, N. J.
98 Brain Abscess due to Bacillus Coli Communis. E. P. Bernstein, New York.

94. **Operations for Nose Deformities.**—The bridge-splint used by Carter consists of a lightly constructed steel bridge, the two wings of which are hinged together in the middle, and the distance to which they can be separated is regulated by a thumb-screw. The edges of these wings are padded with rubber. The second part of the instrument consists of two small intranasal splints perforated by several small holes.

Silk sutures are first passed through holes in the intranasal splints and knotted. By means of a curved needle each suture is then passed from within the nose through the roof fairly near the junction of the bony with the cartilaginous dorsum. The bridge is then placed over the nose and the correct amount of pressure applied to the base of the nasal arch by means of the thumb-screw adjustment. The sutures are then passed through corresponding holes in the bridge and sufficient tension applied to pull the nose up into its proper position. The sutures are then tied together over the hinge of the bridge.

The instrument is said to exert its force along lines diametrically opposed to those of the force that produced the deformity. Carter has found this instrument most useful in treating recent fractures, in correcting lateral displacements, depressed and irregular deformities. This method is said to have the great advantage of correcting the intranasal as well as the external deformity. He has frequently used the bridge-splint in connection with the bone transplantation operation where there was need for additional support.

Modern Hospital, St. Louis

January, II, No. 1, pp. 1-68

99 Architecture and Equipment of New Cincinnati General Hospital. H. E. Hannaford, Cincinnati, O.
100 Planning for Private Patients. S. S. Goldwater, New York.
101 Admission of Patients in Small General Hospital. E. Greener, Muskegon, Mich.
102 James Buchanan Brady Urological Institute of Johns Hopkins. H. H. Young, Baltimore.
103 Social Service: Contribution to Economy and Efficiency. E. V. H. Richards, Boston.
104 Organization of Dispensary of Johns Hopkins Hospital. R. B. Seem, Baltimore.
105 Iowa's First County Hospital Is Pronounced Success. A. Beers, Fairfield, Ia.
106 Efficient Methods in Cost Accounting and Hospital Finances. W. O. Mann, Boston.
107 Roentgen-Ray Department in Small Hospital. E. W. Caldwell, New York.

New Orleans Medical and Surgical Journal

February, LXVI, No. 8, pp. 581-654

108 Prostatectomy Under Local Anesthesia. C. W. Allen, New Orleans.
109 *Use of Vaselin as Substitute for Beck's Paste. P. B. Salatich, New Orleans.
110 Epidemic Cerebrospinal Meningitis: Neurologic Aspects. R. M. Van Wart, New Orleans.
111 Roentgenotherapy of Myoma of Uterus and of Bleeding at Menopause. E. C. Samuel, New Orleans.
112 Ear and Throat Complication of Leukemia and Pseudoleukemia. I. Erwin, New Orleans.
113 Stab Wound of Heart Injuring Left Ventricle, Exhibition of Specimen. L. B. Crawford, New Orleans.
114 Abuse of High Protein Diet in Treatment of Tuberculosis. W. A. Love, New Orleans.
115 Roentgenoscopy of Gastric Ulcer. A. Granger, New Orleans.

109. **Vaselin as Substitute for Beck's Paste.**—Salatich describes his method as follows: Sterilize the amount necessary in an open vessel, set in your sterilizer or water bath, then draw into one or more ordinary glass syringes and use partly warm or cool, as we do Beck's paste. In the most foul and freely suppurating cavities, after one injection and without any other treatment, all odor and suppuration diminish. Abdominal wounds, that suppurate either from infection or contaminated catgut, often show very foul pus. After making an incision—only a small one is necessary when vaselin is used—all the pus is pressed out; the cavity is then filled with vaselin, and the wound needs no dressing for two or three days, at the end of which time very little odor and pus remain. The procedure is then repeated, and the dressing for two or three days, at the end of which time very little odor and pus remain. The procedure is then repeated, and the dressings can remain for a longer period, only wiping the abdomen with alcohol being necessary. It was marvelous to Salatich how rapidly cases healed in which the entire wound above the fascial layers suppurated, and with less danger of hernia resulting.

In all acute and subacute sinuses he says it is best to wait until little serum or sero-pus exudes before injecting the vaselin, especially if there is any fear of dead bone at the bottom, which must be removed, or the patient will be made worse, for the vaselin stops drainage and the pus must find some other means of exit. Salatich points out that vaselin is cheap, easily handled and sterilized and free from danger of poisoning.

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Ophthalmology, Seattle, Wash.

January, X, No. 2, pp. 207-374

116 Interstitial Keratitis in Ophthalmic Practice. J. S. Fernandez, Havana, Cuba.
117 Newer Operations for Acute and Chronic Glaucoma. L. W. Fox, Philadelphia.
118 T-Shaped Sclerotomy. Van Lint, Brussels.
119 Industrial Electricity as Cause of Cataract. E. Lauder, Cleveland.
120 Asthenopia of Muscular Imbalance. H. F. Hansell, Philadelphia.
121 New Plastic Operation for Entropion. F. B. Tiffany, Kansas City, Mo.
122 Adenoids as Factor in Amblyopia. C. F. Adams, Trenton, N. J.
123 Twenty Cases of Trephining for Glaucoma. N. Remmen, Chicago.
124 Cases of Injuries from Foreign Bodies Examined by Roentgen Rays, with Results of Operation. W. M. Sweet, Philadelphia.
125 Three Operations on Eye and Face Under Regional Anesthesia. R. Danis and M. Danis, Brussels.

Public Health Journal, Toronto

January, V, No. 1, pp. 1-63

126 Smoke Problem. R. N. Blackburn, Regina, Sask.
127 Municipal Food Inspection. J. G. Rutherford, Calgary, Alta.
128 Significance of Human Waste in Modern Life and Its Causes. J. S. Woodsworth, Regina, Sask.
129 Plague: Its Varieties and Prevention. W. E. Home, Toronto.

South Carolina Medical Association Journal, Seneca

January, X, No. 1, pp. 361-394

130 Surgical Repair of Blood-Vessels: Technic, Its Uses and Limitations. J. S. Horsley, Richmond, Va.
131 Autotoxemia and Acidosis. T. G. Croft, Aiken.
132 Some Accessory Facts to Eye, Ear, Nose and Throat Work of Interest to All Physicians. L. O. Mauldin, Greenville.
133 What Spartanburg County Medical Society Is Doing for Present Pellagra Situation. J. L. Jeffries, Spartanburg.
134 Surgical Clinics in Europe. H. A. Royster, Raleigh, N. C.

Wisconsin Medical Journal, Milwaukee

January, XII, No. 8, pp. 247-280

135 *Local Skin Reaction following Intradermal Injections of Tuberculin as Guide to Tuberculin Therapy. O. E. Lademann, Milwaukee.
136 Subcutaneous Traumatic Rupture of Intestine with Report of Cases. C. A. Evans, Milwaukee.
137 Physician and Compensation Law. G. E. Seaman, Milwaukee.
138 Regulations Governing Nurses in Wisconsin. M. Iversen, Stoughton.

135. Abstracted in THE JOURNAL, Nov. 1, p. 1657.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Australasian Medical Gazette, Sydney

December 20, XXXIV, No. 25, pp. 563-580

1 Simple Suggestion for Prevention of Pneumokoniosis, Pulmonary Tuberculosis and Allied Disorders. O. Paget.
2 *Cancer of Breast Treated by Secondary Rays from Tin. E. J. Roberts.
3 Paget's Disease of Nipple: Duct Cancer: Arterio-Venous Aneurysm. S. Stacy.

December 27, No. 26, pp. 581-594

4 Diet, Dystrophy and Diarrhea in Infants. W. F. Litchfield.
5 Case of Subcutaneous Emphysema of Face, Neck and Chest Occurring During Labor. H. Gilbert.

January 3, No. 1, pp. 1-20

6 Spinal Curvature. R. E. Roth.
7 Small-Pox of Fetus in Fourth Month. C. Hall.

2. **Cancer of Breast.**—In subjecting malignant tumors of the breast to the action of the secondary rays from tin, a large plate (10 in. by 8 in.) is used by Roberts and placed close against the breast. By using a plate of this size, the rays are distributed over areas where possibly undetected infiltration may be present, and as these rays have no injurious action on the normal tissues, Roberts considers it advisable to assume the presence of permeation or infiltration in the surrounding area. The exposures should be given for ten minutes each at least, or longer, as the operator considers necessary. The patient need not be exposed during the sitting, but corsets should not be worn. Roberts cites three cases.

British Medical Journal, London

January 24, I, No. 2769, pp. 177-228

8 *Chronic Intestinal Stasis: "Auto-Intoxication" and Subinfection. J. G. Adami.
9 *Idem: Anatomy and Treatment. S. S. Pringle.
10 Idem: Etiology and Treatment. H. M. W. Gray.
11 Some Effects of Chronic Intestinal Stasis on Female Generative Organs. H. Chapple.

8. **Auto-Intoxication and Subinfection.**—Adami believes that it is more rational to regard the evil effects of intestinal stasis as, in the main, a result of conditions favoring subinfection and low forms of infection than as a result of chronic intoxication. The term "gastro-intestinal auto-intoxication" is pernicious and not to be employed by any self-respecting member of the profession, save for so limited a set of conditions that for ordinary purposes it may safely be expunged from the medical vocabulary. While he regards it as being possible that the symptoms and diseases enumerated by Lane may follow intestinal stasis, he is convinced at least a large proportion of them may originate independently of such stasis. Before recommending the operation of short-circuiting it is necessary, therefore, to make the fullest studies, so as to discover, if possible, the nature of the organism responsible for the disturbance and its probable seat of entry. A discovery of the cause of the symptoms is calculated to suggest the appropriate means of treatment by means other than short-circuiting. Only when these have been tried and found wanting is removal or short-circuiting of the colon justifiable.

9. **Chronic Intestinal Stasis.**—Pringle divides the treatment of chronic intestinal stasis into (1) prophylactic, (2) medical, (3) local operative, (4) radical operative. He advises under these heads the proper development of the abdominal muscles by suitable exercises; the acquiring in early life of a regular habit of emptying the bowels and the avoidance of the routine use of aperients; the use of an abdominal belt, and the internal administration of paraffin in doses of 1 to 4 drams, three times a day, in the form of liquid paraffin (B. P.) flavored with one of the essential oils, such as cinnamon or peppermint.

In midline ptosis he, as a rule, performs Rovsing's gastropexy, together with shortening of the gastrohepatic and gastrocolic omenta, but in some cases he has employed Coffey's omentopexy. If the liver has also prolapsed and would endanger the success of the gastropexy, he first fixes it up by shortening the falciform ligament and suturing the free edge of the liver to the anterior parietal peritoneum. If the upper abdomen is very contracted he has enlarged it after the manner advocated by Coffey and Rovsing. Should the splenic flexure be slung very high, he divides the costo-colic ligament and opens up the angle by suturing the descending colon to the left lateral abdominal wall after dividing any adhesions which might bind the two limbs of the angle together.

In kinking at the duodeno-jejunal junction he fixes the jejenum to the under-surface of the transverse mesocolon in such a way as to open out the angle; in other words, he reproduces the mesocolic band. For Lane's ileal kink he divides the band parallel to the line of the bowel and sutures the resultant rent vertically, employing, if necessary, an omental graft to assist in covering in the raw area. In mobile dilated cecum unassociated with Jackson's membrane he has employed many methods of fixation, and has also enfolded it in cases of marked dilatation. Recently, however, he has used the method of Coffey. If a mobile cecum is associated with Jackson's membrane, he divides this prior to fixation. When Jackson's membrane is found without ptosis of the cecum, but constricting the colon, he merely divides the membrane, and if any raw surface is left, which occurs in cases of secondary inflammatory thickening, he uses an omental graft to prevent adhesion formation.

If a double-barrelled colon be present, or if the bands in the neighborhood of the hepatic flexure are very dense, and likely to recur, Pringle does a lateral anastomosis between the cecum and the transverse colon, or—and he thinks this the better procedure—excises the cecum, ascending and right half of the transverse colon, and restores the continuity of the intestine by implanting the end of the ileum into the remaining part of the transverse colon. In all cases of trouble in the cecal region he also removes the appendix. Where the last or sigmoid kink is causing trouble he divides the shortened leaf of the mesentery transversely and sutures it vertically. The radical procedures Pringle reserves, short-

circuiting and colectomy, for the cases in which multiple conservative operations would not be effective, or in which the length of time necessary for their performance would endanger the life of the patient. His opinion is that ileocolostomy is not a good surgical procedure, and he believes that where conservative operations are contra-indicated the best operation is complete colectomy.

Dublin Journal of Medical Science

January, 111, No. 505, pp. 1-80

12 Tuberculosis in Persia and Its Treatment by Koch's Tuberculin. H. T. Marrable.
13 Bile Pigments and Their Derivatives in Urine. R. T.: Vaughan.
14 Case of Pneumo-Typhoid Fever. J. Moore.

Journal of Obstetrics and Gynecology of British Empire, London

December, XXIV, No. 6, pp. 287-338

15 Surgical Treatment of Tube and Ovary. C. G. Child, New York.
16 *Serum Reaction in Pregnancy and Cancer by Coagulation Method. W. W. King.
17 Parasitic Uterine Fibroid. C. H. Lilley.
18 Extra-Uterine Pregnancy Twice in Same Patient; Treatment of Tubal Mole. B. Whitehouse.
19 Hydropyonephrosis Complicating Pregnancy. H. T. Hicks.
20 Case of Cesarean Section; Operation. V. Bonney.
21 Case of "Pre-Eclampsia" at Twenty-Fourth Week; Cesarean Section. V. Bonney.

16. **Serum Reaction in Pregnancy.**—The serum of pregnancy and malignant disease was tested by King against various tissues. The albumin was obtained from the urine of a patient suffering from albuminuria of pregnancy, and her serum was the only one out of four pregnant patients which did not digest this substance. The carcinoma tissue was obtained from a case of advanced carcinoma of the cervix, and both this and the albumin were prepared exactly in the same way as the placental albumin. Out of nine pregnant serums, six digested other albumins besides placenta, thus demonstrating that the ferments of pregnancy are not limited in their power of digesting albumin. Of eight cases of malignant disease, three digested placental tissue. These three cases included one of sarcoma of the knee. The digestion of the placenta shows that a ferment was present, and rather suggests to King that a positive result might have been obtained if suitable tissue had been available. Urinary albumin was not, however, digested by this serum, though a case of epithelioma of the tongue reacted strongly to it. Three sarcomas were negative to carcinoma tissue. Thus out of seventeen cases of pregnancy and malignant disease, nine serums digested albumins of a different type from that against which, *ex hypothesi*, they were produced. Hence if King's observations are accurate the ferments are not specific.

Journal of Tropical Medicine and Hygiene, London

January 15, XVII, No. 2, pp. 17-32

22 *Use of Tuning-Fork in Diagnosing Outlines of Solid and Hollow Viscera of Chest and Abdomen and of Certain Pathologic Conditions. J. Cantlie.
23 "Espasmo Tropical"; Malignant Disease Associated with Parasite in Blood. R. Vergne.
24 Detection of Trypanosomes in Animals. A. Lundie.

22. **Diagnosing Outlines of Solid and Hollow Viscera of Chest and Abdomen.**—For some years Cantlie has used the tuning-fork in conjunction with the stethoscope as a means of ascertaining the exact outlines of the liver and other organs. The principle involved in the use of the tuning-fork-stethoscope method is that when the stethoscope is placed over an organ, be it a solid organ such as the liver, spleen, heart, etc., or a hollow organ such as the stomach or cecum, and the vibrating tuning-fork is made to impinge on the surface of the body over one or other of these organs, the note of the tuning-fork manifests by its loudness the limits of the organ being examined, and the moment the limits are passed the note becomes faint, distant, or is altogether inaudible. The best results are obtained by a fork whose note is G-sharp, and the end of the fork is not flattened, but pointed rather. The fork may be struck against anything hard, the heel of the boot if nothing else is available, and while loudly vibrating the end of the stem is pressed lightly but firmly on the skin.

The practical application of the tuning-fork-stethoscope method, applied, say, to the liver, is as follows: Place the stethoscope (binaural) on the lower part of the chest wall just above the lower part of the right true rib cartilages about one inch behind a line drawn downward from the right nipple. The tuning-fork is now made to travel from the region of the chest midway between the sternum and the nipple line downward over the liver. The note heard (if heard at all) when the tuning-fork is over the lung is faint or distant, but the moment it reaches the area of the liver the note is loudly heard; when the lower limit of the liver is reached and the tuning-fork has other abdominal organs beneath it, the sound suddenly fades away to a faintly distant hum. The degree of pressure necessary for diagnostic purposes varies; over the chest the end of the fork has only to be gently pressed against the skin; but when a careful search has to be made for the limits of the lower edge of the liver, as in stout people or in cases of distentions from gas in the intestines or fluid in the peritoneal cavity, the fork has to be pressed fairly deeply at times, so that the piece of intestine may be pushed aside or the fluid between the abdominal wall and the liver displaced.

Lancet, London

January 24, I, No. 4717, pp. 223-288

25 Pathology of Syphilis, Especially in Its Bearing on Treatment. W. d'E. Emery.
26 Dosage: Suggested Amendments in Stating Doses of Medicines in British Pharmacopeia. C. O. Hawthorne.
27 Bismuth Ureteral Catheter, Collargol Solution and Barium Sulphate Suspension in Diagnosis of Some Urinary Diseases. R. J. Willan.
28 *Protein Metabolism During Starvation and after Administration of Milk Protein. G. Mann.
29 *Toleration of Arsenic by Human System. H. G. A. Harding.

28. **Protein Metabolism during Starvation.**—Starvation, according to Mann, invariably leads to a rarefaction of the cell body and its processes. In all starved animals the contractile elements of the heart, both the isotropous and the anisotropous, undergo an atrophy amounting to 25 per cent. of the normal state. The nervous system also suffers during starvation. This loss, if stimulation of the nervous system is eliminated, is restricted to the conducting paths. Feeding with sodium caseinogenate containing 5 per cent. of sodium glycerophosphate it is possible within two hours to get a definite increase in the nuclear activity even of cells which are not supplied directly by the blood, as, for example, in the cornea and in cartilage. This milk protein further leads to an increased depth of staining of the heart muscle and of nerve fibers, and this deeper staining it is impossible to explain in any other way, except to assume that the amino-acids liberated by the digestion of the caseinogen are actually built up into what Mann terms the "available" protein. From the conservation of protein point of view, as well as from that of restoration, it is absolutely necessary to have a non-purin-containing, easily digestible albumin. From the evolutionary point of view milk protein is the best. Caseinogen with its phosphorus content and other radicals is to the mammal what the yolk and the white of egg together are to the fowl. Neither of these foods contains purin, but, being mammals, Mann advises to give milk protein in fevers and in all cases of debility in preference to eggs, especially as crepsin by itself is capable of digesting caseinogen. Also, he says, give a minimal amount of the fats of milk, just sufficient to bring calories up to 3,500 or 4,000, especially when dealing with adults, and thereby hasten absorption of the amino-acids and also the liberation of waste nitrogen by the liver. Milk sugar, because of its slow conversion into its monosaccharids, and therefore steady supply of potential heat, should be left for calorific purposes in combination with caseinogen.

29. **Toleration of Arsenic by Human System.**—Beginning with 1/60 gr. doses of arsenious oxid thrice daily immediately after food, Harding reached the dose of 1½ gr., which produced irritability and distinct and lasting discomfort every way it was taken and all precautions notwithstanding. In 1 gr. doses the drug could only be taken with comfort if dry foodstuffs were consumed at meals—if liquid beverages were

partaken of, or if the food was of the sloppy order, the administration of the grain dose of As_2O_3 produced immediate discomfort and burning pains in the abdomen, lasting forty minutes to one hour and acting as a distinct aperient within three hours.

Archives des Maladies de l'App. Digestif, Paris

December, VII, Nos. 1-2, pp. 661-724

30 *Fat Content of Blood during Digestion as Test of Functioning of Biliary Apparatus. (La lipémie digestive dans les affections du foie et des voies biliaires.) A. Lemierre, M. Brulé and A. Weill.
31 *Reflex Syndrome Started from Large Intestine. (Cas grave de réaction colique.) A. Mathieu.
32 Pathologic Proportion of Amino Acids in the Urine. M. Labbé and H. Bith.

30. **Digestive Lipemia.**—Lemierre and his coworkers comment on the simplicity and convenience of methods of research on the blood rather than on the stool when studying the absorption of substances from the food, especially fat. By determining the fat content of the blood during or following at once on digestion, we can recognize any pathologic increase or drop. Either the ultramicroscope for the whole blood or chemical analysis of the serum will supply the figures. The blood of a person fasting for twenty-four hours shows none of the fat granules in the spaces between the corpuscles on dark field illumination, but after a meal with much fat the blood swarms with the shiny granules of fat. Nothing should be eaten after a light supper, without fat, until a drop of blood is taken next morning to examine with the dark field. Then the test breakfast is eaten and the blood is examined anew from two to five hours afterward when the fat particles in the blood are at their maximum. Under normal conditions, the blood swarms with them and chemical tests confirm that this blood dust is truly fat particles.

Their research has demonstrated that in case of total obstruction of the biliary passages there is no absorption of fat into the blood. When there is jaundice from retention of bile pigment alone, the absorption is not modified but when there is retention of the bile salts, the fat particles cease to appear in the blood. This dissociation of the bile and retention of only part of its elements have been demonstrated again and again by determination of the digestive lipemia. For this isolated retention of the pigment or of the bile salts alone, the liver itself must be responsible, as nothing else could display such selective action in this line. Experiments on numbers of dogs confirmed these theoretical assumptions, injury of the parenchyma of the liver by means of specific cytotoxins reproducing at will the two types of dissociated jaundice. The pancreas was shut off from the digestive tract in twenty dogs but this did not seem to influence the absorption of fat from the food; this suggests that in many cases of defective absorption of fat in which the pancreas was incriminated, the liver was really at fault.

31. **The Colon Reaction Syndrome.**—Mathieu called attention in 1909 to the severe disturbance, vertigo, syncope and pain which are liable to come on suddenly as a reflex reaction to the abrupt emptying of the large intestine after a period of constipation. Any syncope may prove fatal under certain conditions, and the colon reaction may superpose a puzzling element in other affections, especially in neurasthenics and with chronic colitis or lead poisoning. Gaucher has reported a case of the latter in which the patient died during the act of defecation and nothing except the assumption of this colonic reaction could be found to explain the fatality.

To illustrate the possible gravity of this reaction, Mathieu gives the details of a case in which a young woman was operated on for supposed perforation of a gastric ulcer but nothing of the kind was discovered and the retrospective diagnosis was a series of colonic reactions occurring each time at defecation after a period of constipation. The main symptoms were vomiting, epigastric pain, tendency to collapse, syncope, and small rapid pulse. In another case a woman of 50 with chronic colitis had a very severe colonic reaction following a medicated enema; the pulse kept good but the cold extremities, cyanosis, drawn features, general depression and other features of the crisis persisted for three hours.

Archives Mensuelles d'Obstétrique et de Gynecologie, Paris

December, II, No. 12, pp. 465-604

33 Two Cases of Successful Transfusion of Blood after Delivery. C. Jeannin and J. L. R.-Berger.
34 *Prolapse of the Cord. R. Johansson.
35 Effect of Roentgen Rays on the Ovary. A. Levant.
36 Legislation on Rest for Parturients. M. Levant.

34. **Prolapse of the Cord.**—Johansson states that this occurred in 35 of the 7,518 obstetric cases at the Lund maternity since 1900. In nearly 29 per cent. of the cases the cause of this complication seemed to be some contraction of the pelvis. In 20 cases there was head presentation, in 6 shoulder, and in the others breech or foot presentation. There was placenta praevia in only 1 case. In 2 cases the fetus was dead and the delivery was left to Nature, but in the other cases it was hastened to save the child. The lesson taught by this material is the necessity for delivering the child at once even if labor has only just commenced. This can be easily done by incising the cervix, which was done in one of the cases with excellent outcome, delivering the fetus before it showed the slightest signs of asphyxia. This is particularly important with breech and foot presentation. Temporizing is more dangerous for the child than instrumental or operative delivery. The experiences at other clinics are compared with those at Lund, to sustain these statements.

Bulletin de l'Académie de Médecine, Paris

January 6, LXXVIII, No. 1, pp. 1-43

37 High Arterial Pressure of Renal Origin a Defensive Reaction. C. Fiessinger.
38 Xiphopagus. (Deux fillettes xiphopages.) G. Le Filliatre.

Bulletins de la Société de Pédiatrie, Paris

December, XV, No. 10, pp. 517-541

39 Transient Cardiac Collapse during Vaccine Therapy of Typhoid Fever. H. Méry.
40 Radiography of Tracheobronchial Lymph-Nodes. E. A. Weill.

Journal de Médecine de Bordeaux

January 11, LXXXV, No. 2, pp. 19-30

41 Vaccine Therapy of Typhoid Fever. R. Lafargue.

January 18, No. 3, pp. 31-48

42 Drawing Down the Foot with Incomplete Breech Presentation (Abaissement prophylactique du pied dans la présentation du siège décomplété mode des fesses.) Fieux.

Lyon Médical, Lyons

January 11, XLVI, No. 2, pp. 57-108

43 Secondary Pneumothorax of Traumatic Origin. Pleural Eosinophilia. Recovery. F. Barjon, Langeron and Garnier.
44 Recent Discoveries in General Paralysis and Attempts to Find a Successful Treatment. L. Bériel. Commenced in No. 1.

Presse Médicale, Paris

January 10, XXII, No. 3, pp. 21-32

45 *Removal of Enlarged Spleen with Chronic Jaundice. (La splénectomie dans les ictères chroniques splénomégaliques.) A. Gilbert, E. Chabrol and H. Bénard.
46 Depressing Action on Blood Pressure of Certain Hypophysis Extracts. H. Claude and R. Porak.
47 Physiologic Cytolysis. (Les conditions physiologiques et pathologiques de l'homoeolyse et de l'isolyse des globules rouges.) L. Bory.
48 *Tonus of Uterine Cervix as Aid in Gynecologic Diagnosis. (Tonicité utéro-pelvienne.) Macrez.

January 14, No. 4, pp. 33-40

49 *Diabetes plus Typhoid Fever. M. Labbé and A. Gendron.
50 Resection of Esophagus for Cancer Under Artificial Respiration Maintained by Motor. A. Baumgartner.

January 17, No. 5, pp. 41-52

51 Experimental Auricular Fibrillation. H. Busquet.
52 Technic for Local Anesthesia with Colpo-Perineorrhaphy. L. Kendirdjy.
53 Diagnostic Import of the Minimal Blood Pressure. C. Lian.

45. **Splenectomy for Chronic Jaundice with Splenomegaly.**—Gilbert had a patient drifting into pernicious anemia when he began to read of benefit from splenectomy in such cases, and had soon found records of forty-eight in which splenectomy was applied for progressive anemia. Five of the patients died but all the others were improved and a number were apparently cured. The progressive anemia and emaciation in his patient, a butcher of 45, the absence of pain in the spleen region and the movability of the spleen all encouraged its removal, which was done with the minimum of operative shock. In a week the number of reds had climbed from 1,200,000 to 1,900,000 and the gradual improve-

ment continued until the general condition was very satisfactory. The spleen weighed 950 gm. but seemed normal until histologic examination revealed sclerosis and the traces of intense hemolysis. Although the benefit did not amount to a resurrection, yet the improvement was beyond question and has persisted for over a year to date.

48. **Tonus of the Uterine Cervix as Guide in Treatment of Pelvic Disease.**—Macrez expatiates on the value of the information as to conditions in the pelvis which may be obtained from the uterine cervix — whether it is relaxed or spasmodically contracted. In some cases the atony alternates with hypertonicity. With hypertonicity, the general nervous system requires soothing; electricity or spa treatment is useful here. As long as the sphincter of the internal os is not normal, the cure of a gynecologic affection is not complete and recurrence is liable. There may be some erosion of the mucosa causing the trouble, similar to that from an anal fissure but promptly amenable to treatment. When the cervix is abnormal in this way, the patient may suffer vaguely or may have tenacious neuralgia in the pelvis, or permanent sterility when she is longing for children. If a pregnancy intervenes, the cervix enters on a new phase and all returns to order; some women say they never feel quite well except when they are pregnant.

49. **Typhoid Fever in Diabetics.**—The typhoid fever in the case reported had a number of complications and ran an atypical course for which the diabetes was probably responsible. This experience confirms the general impression that a febrile affection often has an aggravating influence on diabetes. It may even arouse the tendency to diabetes for the first time in a person presumably healthy. The typhoid is liable to run an unusually severe course in a diabetic; of the seven cases of this class he has found on record, only two of the patients survived the typhoid.

Revue de Chirurgie, Paris

December, XXXIII, No. 12, pp. 825-1040

54 Deformity of Tarsus Simulating Fracture. (L' "os tibiale externum," ses rapports avec la tarsalgie et la fracture du scapholde tarsien.) A. Mouchet.
55 Operative Treatment of Gastric Ulcer. L. de Rydygier.
56 *Autodrainage for Internal Hydrocephalus. L. M. Pussep.

56. **Operative Treatment of Hydrocephalus.**—Pussep trephines above the ear, and cuts a tongue-shaped flap in the dura 2 cm. in diameter and 3 cm. long, which is slit its entire length. The brain is then punctured with a needle 3 mm. in diameter, made of several small tubes 3 cm. long, screwed together to form one tube. The tube-needle is pushed down into the ventricle until fluid commences to flow. Then the superfluous parts of the tube are unscrewed and the halves of the outer end of the part of the tube left are bent apart at right angles. The two flaps of dura are drawn underneath the little T-tube. It thus rests on the dura flaps, and can rise and fall freely with the respiratory movements of the brain. He has applied this technic to eighteen children for hydrocephalus and to two adults for brain tumors. Among the fourteen children whose case-histories are given in full, in three the hydrocephalus was secondary to a brain tumor, in one acute, and in ten chronic. In the ten chronic cases benefit was constantly realized, the more pronounced the earlier the intervention. In the brain tumor cases the operation warded off blindness. Two of these patients were relieved of their distressing symptoms and vision persisted unimpaired. Necropsy in one case in which the tube had been worn for three months, showed that a permeable passage had been definitely formed. By eliminating the symptoms due to the hydrocephalus, it may first prove possible to locate a brain tumor. Vigorous internal treatment and general measures are indispensable to reenforce the action of the autodrainage. The technic advocated is a modification of Krause's method.

Semaine Médicale, Paris

January 14, XXXIV, No. 2, pp. 17-24

57 Loss of Hemiopic Lid Reflex in Hemiplegia. (De la perte hémiopique du réflexe palpébral dans les hémiplégies.) L. Bard.
58 Tumors of the Chest Wall. (Les tumeurs, de siège anormal, du squelette thoracique.) F. Lejars.

Archiv für Gynaekologie, Berlin

CI, No. 3, pp. 513-774. Last indexed February 7, p. 495

59 *Means to Promote Labor Contraction of the Uterus. (Ueber Wehemittel.) A. Tassius.
60 Acardius Monster. (Fall von Acardius anencephalus mit partiellem Defekt beider Müller'schen Fäden.) R. Klotz.
61 Hypophysis Extract as Oxytocic. W. Gardlund.
62 *Connection between Ovulation, Menstruation and Pregnancy. (Corpus luteum, Menstruation und Gravidität.) J. W. Miller.
63 Adenomyomas of Female Genital Tract. A. Bortkiewitsch.
64 *Influence of Age of Mother on Presentation, Course of Delivery, Etc. (Erfahrungen an den letzten 10,000 Geburten mit bes. Berücksichtigung des Altersbildes.) E. Zweifel.
65 Dystocia from Distention of Fetal Bladder. P. Böhl.
66 *Carcinoma at Same Time in Uterus and Adnexa. P. Werner.

59. **Means to Accelerate Labor.**—Tassius says that when it is a question of reenforcing weak labor contractions, the practice at the Breslau maternity is to give quinin and supplement this with hot compresses, hot baths and superheated air. This with primary weakness of the labor contractions at term or with abortion tends to induce vigorous and prolonged labor contractions. During the second stage of labor, when it is a question of hastening delivery with prompt and vigorous action, hypophysis extract is given to make it unnecessary to apply the forceps. Ergot is only exceptionally given at any time except to combat inertia, atony of the uterus and afterhemorrhage. It is generally combined with some hypophysis extract and hot compresses to induce a rapid and persisting effect. When it is a question of inducing labor contractions to bring on premature delivery, the metreurynter (glycerin-sheep bladder) is the sole reliance. The experiences related cover two years and embrace 4,109 deliveries.

62. **Ovulation, Menstruation and Gestation.**—Miller discusses the biology of the corpus luteum and its connection with gestation, his clinical and experimental experience confirming, he thinks, the assumption that the corpus luteum is a periodically developing gland with an internal secretion. It is responsible for the cyclic transformation of the endometrium into decidua, and also for the trophic conditions in the uterus, the turgor which protects the incipient pregnancy; the corpus luteum also prevents the ripening of another ovum while the pregnancy lasts. Menstruation is merely the relief of the hyperemic uterus; it has nothing to do with conception. The most favorable time for conception is the tenth day before the onset of the following menses. The ovulum of the first suppressed menses is the one embedded; there is no such thing, he declares, as a postmenstrual embedding. The standard duration of pregnancy should therefore be reduced by nineteen days.

64. **Influence of Mother's Age on Course of Childbirth.**—Zweifel gives twenty-five charts showing the frequency of complications, operations, etc., in 10,000 maternity cases classified according to ages. The proportion of operations required increased with the mother's age, both for women who have borne children before as well as for the primiparae. This was true also for eclampsia and placenta praevia, but laceration of the perineum occurred less frequently with pluriparae with increasing age and more frequently in older primiparae. The mortality of the children was higher with pluriparae than with primiparae, on account of the greater tendency among the former to transverse presentation and placenta praevia.

66. **Simultaneous Cancer in Uterus and Adnexa.**—Werner was not able to find any clinical data which permit differentiation of this condition. He found a cancer in the adnexa along with the cancer in the uterus in 4 per cent. of 374 operations for cancer on the internal genitals; in three of the fourteen cases the cancers seemed to be entirely independent of each other.

Archiv für klinische Chirurgie, Berlin

CIII, No. 2, pp. 255-583. Last indexed January 31, p. 415

67 *Treatment of Cleft Palate and Harelip. (Ueber die Behandlung der Kiefer- und Gaumenspalten, unter bes. Berücksichtigung der Frühoperation und der Methode nach Brophy.) E. Kaerger.
68 *Technic to Promote Healing of Wounds in Liver, Spleen and Kidneys. (Heilung der Leber-, Milz- und Nierenwunden.) G. A. Waljaschko und A. A. Lebedew.

69 *Nail Extension. (Nagelextension.) H. Riedl.
70 *Sterility and Bactericidal Action of Normal Bile. R. Toida.
71 Fate of Skin Flaps. (Schicksal des homöoplastisch transplantierten Hautlappens beim Menschen.) T. Oshima.
72 Experimental Surgery of Aorta under Intratracheal Insufflation General Anesthesia. O. Uffreduzzi and G. Giordano.
73 *Acute Pressure on the Brain. (Zur Frage des Hirndrucks. I.) F. Breslauer.
74 Obturator Hernia; Six Cases. E. Meyer.
75 *Non-Malignant Stenosis of Bile Passages from Other Causes than Gall-Stones. J. Berg.
76 *Total Prostatectomy for Hypertrophy. A. P. Grinenko.
77 Transplanted Renal Veins. (Endgültiges Ergebnis der Verpflanzung der Nierenvenen an eine andere Stelle der unteren Hohlvene.) E. Jeger and W. Israel.
78 Preliminary Ligation of Vessels for Exarticulation of Hip Joint. I. Goljanizki.

67. **Cleft Palate and Harelip.**—This communication issues from the university clinic at Berlin in charge of Bier and is profusely illustrated; 212 bibliographic references are appended. The early intervention and the Brophy technic are discussed in particular, Kaerger stating his preference for the technic used at the clinic which differs from Brophy's especially in that the alveolar processes are not separated and their position changed. He emphasizes the importance of cooperative supervision, from birth onward, by pediatrist and surgeon, of children with these deformities until they have been finally and completely corrected and approximately normal conditions restored. The surgeon should determine the indications for intervention at the earliest possible moment compatible with the development of the child and its condition as regards nourishment and growth; the various steps of the intervention should be guided according to these indications.

68. **To Promote Healing of Wounds in Parenchymatous Organs.**—After injury, incision or multiple rupture of the liver, spleen or kidney in twenty-two large dogs, the wound healed remarkably promptly and perfectly under a smooth'y fitted sheet of fascia tissue with care to aspirate all blood and clots. A water-jet vacuum pump was used to aspirate the blood which it did so effectually that healing was materially promoted, as otherwise there is a tendency to thrombus production after such injuries. The fascia tissue fitted over the traumatized area serves as a living tampon, protecting against secondary hemorrhage, reenforcing sutures and reducing the number of sutures necessary and enabling ligatures to be dispensed with. This is a special advantage in operating on the liver as intrahepatic and analogous ligatures induce a tendency to necrosis. The superficial fascia is convenient for the purpose, and it does not irritate the organ in any way so that there is no disposition to proliferation of connective tissue in response. The fascia can be slit, the kidney drawn through it and the fascia then drawn together below to make a kind of capsule pressing tight on the kidney surface and arresting hemorrhage while coaptating the lips of jagged rupture wounds so that healing proceeds perfectly; all blood and clots are first pumped out with the vacuum pump. The fascia is elastic enough so that no pressure necrosis results, even when it is drawn quite tight, and there is no development later of a cicatricial capsule to entail contracted kidney.

69. **Nail Extension in Treatment of Fracture.**—Riedl applied nail extension in forty cases of fracture of the femur, tibia or calcaneus, and regards the method as almost indispensable in the treatment of serious fracture. It requires constant Roentgen control and should not be applied near discharging wounds.

70. **Sterility of the Bile.**—Toida's research indicates that the bile is sterile under normal conditions but it is a good culture medium for the colon bacillus, enhancing its virulence, while it is an unfavorable medium for the growth of the streptococcus and the pneumonia diplococcus.

73. **Acute Pressure on the Brain.**—In this part of his monograph Breslauer reviews the testimony on hand as to the cause of the unconsciousness with concussion of the brain, and draws the conclusion that it is not the general shake-up of the brain which is responsible for the symptoms with concussion of the brain. Both the clinical and experimental data point to a local injury of the base of the lower part of the brain stem. The general phenomena accompanying concussion of the brain are consequently focal symptoms.

75. **Stenosis of the Biliary Passages without Cancer or Gall-Stones.**—In the three cases reported an operation was done, but if the character of the trouble had been known beforehand, medical-dietetic measures would probably have answered all the indications and proved fully as successful in curing the disturbances. Although such cases are rare, yet they present such a characteristic clinical picture that differentiation is generally possible; the patients have suffered for many years, possibly even from childhood or youth, from intermittent attacks of apparently gall-stone colic without fever, with or without transient jaundice, and without any appreciable influence on the general health, but often with an unmistakable connection with gastro-intestinal disturbances. The cases are usually interpreted as chronic cholecystitis, and the gall-bladder is removed, but the attacks of colic are liable to recur later. The inflammation in the biliary passage probably responsible for the trouble may be secondary to gall-bladder disease, or the gall-bladder trouble may be secondary.

One of the cases reported shows that when the latter is the case, there is no sense in removing the gall-bladder which is only secondarily affected. In his case the colics persisted unmodified and each was preceded and followed by transient jaundice without fever. There is much to sustain the assumption, Berg thinks, that the aggravation which followed the removal of the gall-bladder was due to the loss of the assistance previously furnshed by the contractions of the gall-bladder in the work of cleaning out the stenosis from accumulations of pigment and mucus, etc. In every such case the question should be debated whether the removal of the gall-bladder does in fact represent the elimination of the most important source of the irritation. If the gall-bladder is of comparatively sound aspect and if it contains stones, it had better be left intact and merely the stones removed.

It is useless to drain the gall-bladder or the hepatic duct in these cases, while it is liable to entail severe infection. The laparotomy therefore should be exploratory, examining the bile, the gall-bladder, the hilus of the liver, the duodenum and the pancreas. Weighing the findings in connection with the history of the case will be the guide to treatment which should be conservative-surgical. Dieting and care of the stomach and duodenum are the most important measures for curing the morbid tendency. The non-malignant stenosis in question is liable to modify the chemical composition of the bile to such an extent as to lead to production of concrements in the gall-ladder or even in the liver.

76. **Prostatectomy.**—Grinenko insists that the prostate has no capsule of its own and that there is no anatomic justification for speaking of it as separated into lobes. He regards the transvesical operation as the only rational method; this removes the peri-urethral adenoma causing the trouble while the prostate proper is left approximately intact.

Berliner klinische Wochenschrift

January 12, LI, No. 2, pp. 49-96

79 Traumatic Epilepsy from Firearm Wound; Fascia Graft; Recovery. H. Coenen.
80 Aviators' Injuries. (Fliegerverletzungen.) Marx.
81 Radium in Treatment of Cancer. Weckowski.
82 Treatment of Inoperable Tumors. H. Simon.
83 Mesothorium in Treatment of Superficial and Internal Cancer. E. Kuznitzky.
84 Importance of Contact Infection in Cholera. Aumann.
85 Serotherapy in Scarlet Fever. (Zur Theorie des Scharlachs.) A. Cederberg.
86 Influence of Diet on Sugar Content of Blood in Diabetes. L. Wolf and S. Gutmann.
87 Female External Pseudohermaphrodite with Hyperplasia of Adrenals. C. Benda.
88 Choked Disk in Rats after Intracranial Injection of Sarcoma Extract. (Zur Entstehung der Stauungspapille.) A. Rados.

Centralblatt für die Grenzgebiete der Med. und Chir., Jena

January 15, XVIII, No. 1, pp. 1-140

89 *Diagnostic Puncture of the Brain. (Die Neisser-Pollack-sche Hirnpunktion.) E. Röper.
90 *The Spleen Function. (Milzfunktion.) A. Meyer.
91 *Perforated Gastric Ulcer. (Das perforierte Magengeschwür.) J. Schoemaker.
92 *Functional Tests of the Kidney. (Funktionelle Nephritisdiagnostik.) L. Borchardt.

89. **Puncture of the Brain.**—Röper reviews the history, technic and results of puncture as set forth in sixty-one articles in German literature. All agree that it has proved an extremely useful aid in the diagnosis, but the general opinion seems to be also that it should not be attempted outside of well-equipped hospitals. This is particularly necessary as the puncture may indicate the necessity for trephining at once. On account of the fatal prognosis of a brain tumor, the slight danger from the exploratory puncture may well be overlooked. The puncture alone may relieve to such an extent that trephining may not be necessary. Röper concludes his review with the remark that his experience with necropsies impresses on him more and more that puncture of the brain is not applied often enough. The information to be derived from it is naturally of greatest interest for neurologists and internists, and he hopes that they will learn to appreciate its importance better.

90. **Functioning of the Spleen.**—This review embraces 363 articles which are listed by titles. There seems much to sustain the assumption that some substance is produced in the spleen which causes or promotes peristalsis, in addition to its function as the seat of destruction of blood corpuscles.

91. **Perforated Gastric Ulcer.**—The literature since 1902 is listed and reviewed; it shows a total of 748 operative cases of perforated gastric ulcer, with mortality of 357. This is not much of an improvement over the 48 per cent. in the 387 cases compiled by Brunner in 1903. Progress must be along the lines of earlier diagnosis. In 176 recent cases only sixty-nine of the patients were able to have the operation done within the first ten hours; in fifty-one cases there had been an interval of over twenty-five hours. This compilation fits in with Brunner's, so that the two comprise the international literature 1897-1911.

92. **Estimation of Renal Functioning.**—Borchardt recapitulates the result of recent research on the functioning of the kidneys in health and disease, and remarks that the important points recently learned in respect to the renal elements involved in various forms of nephritis render the outlook very promising for further research along the same lines to complete our knowledge of kidney function. Study of the glomerular and of the tubular diuresis, separately, may prove very instructive. The water test may be regarded as giving information in regard to tubular diuresis. With red granular kidney the tubular diuresis seems to be intact, while with secondary contracted kidney and the combination form, tubular diuresis is lacking. With mild nephritis, more urine is voided during the day than at night, as the food has a diuretic action on the sensitive kidneys. With severe tubular disease, the contrary is observed; there is no oversensitiveness of the kidneys and no tubular water diuresis during the day. It is possible that the badly damaged kidney may recuperate to such a degree during the night that this alone would explain the more copious excretion of urine at night. Volhard's test for the concentrating capacity of the kidney reveals whether there is hyposthenuria or not. The Vaquet and Cottet test yields no information in regard to glomerulus functioning, but throws much light on tubule functioning. Borchardt says of the phenolsulphonephthalein test that it does not seem to be applicable to pregnant women; positive findings have been reported in apparently entirely normal persons giving a constantly negative response to other tests. It would be interesting to apply this test in dubious cases of kidney trouble without albuminuria or tube casts, or in cyclic or orthostatic albuminuria. He does not know of any reports of its application in such cases.

Correspondenz-Blatt für Schweizer Aerzte, Basel

January 3, XLIV, No. 1, pp. 1-32

93 Serodiagnosis of Pregnancy. P. Hüssy and E. Kistler.

January 10, No. 2, pp. 33-64

94 *Differentiation of Human and Bovine Tubercle Bacilli from Human Lesions. W. Schürmann and R. Burl.

95 Paratyphoid Food Poisoning. (Nahrungsmittelvergiftungen durch Bakterien der Coli-Paratyphusgruppe.) R. Massini. Commenced in No. 1.

January 17, No. 3, pp. 65-96

96 *Somatic Basis for Dementia Praecox. E. Fankhauser.

97 Examination of Recruits for Hernia. (Untersuchung auf Unterleibsbruch.) C. Kaufmann.

94. **Differentiation of Human and Bovine Tubercle Bacilli.**—Schürmann and Buri state that there are about 1,441 cases of human tuberculosis on record in which the bacilli were cultivated with a view to determining whether they were of the human or bovine type. The bovine type was found in 8.1 per cent. of the total, and mixed in 0.5 per cent. The bovine type was found only in children. The present article is the first in Switzerland along these lines, and reports the outcome of bacteriologic study in seventy-five cases of tuberculosis of different organs. The bacilli of both types resemble each other so closely that it is difficult if not impossible to distinguish between them on culture media, but subcutaneous injection of ground tuberculosis tissue into rabbits solves the problem in the most rapid and simplest manner. None of the patients from whom the material was derived was under the age of 16, and in none was the bovine tubercle bacillus discovered.

96. **Somatic Basis for Dementia Praecox.**—Frankhauser comments on the way in which the latest research has demonstrated microscopic changes in the brain with dementia praecox which seem to be the work of abnormal functioning on the part of certain of the ductless glands, especially the thyroid and the genital glands. The blood picture also seems to be modified and possibly also the lymphatic organs. All the newly learned data from serology also confirm the assumption of a somatic basis for the trouble.

Deutsche medizinische Wochenschrift, Berlin

January 8, XL, No. 2, pp. 57-104

98 *Convulsions. (Behandlung der allgemeinen Krämpfe.) Grober.

99 *The Question of Thrombosis. H. Ribbert.

100 *Auxo-Autolytic Substances in Serum Promoting Action of Enzymes. H. Guggenheimer.

101 *Origin of Cancer. (Zur Karzinomfrage.) E. Weiss.

102 Heart Disturbances Following Accidents. (Herzstörungen nach Unfall.) P. Horn.

103 *Importance of Repeated Graduated Tuberculin Skin Reaction in Systematic Treatment of Pulmonary Tuberculosis. H. Kögel.

104 Scleroma in Germany. (Die epidemiologische Bedeutung des Skleroms der oberen Luftwege für Deutschland.) E. P. Friedrich.

105 Radiotherapy of Tumors. (Strahlenbehandlung von Geschwülsten.) H. Sellheim. Commenced in No. 1.

106 *Repeated Chilling of the Feet as Factor in Contracted Kidney. (Zur Aetiologie der Schrumpfniere.) Engelen.

98. **General Spasms.**—Grober in commenting on the differentiation of an epileptic seizure from hysteria, says that the former corresponds to changes in a circumscribed portion of the brain and consequently the spasm is restricted to certain movements and the reflexes are liable to be lost. Only exceptionally is the pupil reflex lacking in hysteria and when this occurs, it suggests a possible combination of hysteria and epilepsy. He has had several cases in which the convulsions of hysteria developed in the course of years into true epileptic seizures. The epileptic seizure occurs more suddenly than the hysteric. If the pulse and respiration are good, Grober places the patient on a bed or sofa pushed against the wall, with the backs of chairs against the outer side of the bed, the wall and chairs protected with blankets or cushions so that no physical injury can occur. Then he insists on quiet and expectant treatment, merely striving to rouse the patient by moral suasion. Violent measures such as a box on the ear would rouse the patient, but would destroy his liking for and trust in the physician, which are especially important in the management of hysteria. If the spasm keeps up over an hour, 3 to 5 gm. chloral might be given in an enema.

Nothing will break up an epileptic seizure, and the physician can only watch over the patient in bed, refraining from any interference, allowing the patient to rouse naturally. If the pulse and respiration keep good, the seizure may last for an hour without harm; bromid or chloral might then be given, but never by the mouth. If the seizures keep up for hours, one is justified in cautiously putting the patient under the influence of chloroform or morphin. In toxic con-

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vulsions, purges, venesection, sweating procedures, copious drinking of milk or alkaline water, copious and long continued rinsing out of the stomach may be indicated. Lavage of the stomach may ward off further spasms in acute gastro-intestinal catarrhal affections that have brought on tetany or convulsions. Full warm baths for fifteen to forty-five minutes or application of superheated air may prove useful, aborting further spasms by cold packs to head and chest. In tetanus the slightest jar or movement may bring on new convulsions, so that the care of the patient with tetanus is of vital importance. Even the act of swallowing may be dangerous. Many tetanus patients succumb to pneumonia from fluid or food getting into the air passages. Long full warm baths may quiet the patient in mild forms of tetanus, but there is danger of bringing on more spasms as he is moved into the bath. Superheated air baths have done good service in the experience of some. When the muscles of respiration share in the contracture, artificial respiration becomes necessary, but the ordinary procedures are blocked by the rigid contractures and nothing more than cautious rhythmic compression of the lower circumference of the chest can be applied with or without the oxygen tank.

With rabies, any noise, any movement, even of the air, is liable to bring on the spasm. Only the strongest narcotics bring relief here; the maximal dose of morphin may give the patient a few hours' respite. Chloroform increases the agitation; the subcutaneous narcotics are better.

99. **Thrombosis.**—Ribbert thinks that there is great practical importance for the prophylaxis of thrombosis in the results of recent research which indicate that an enhanced tendency to coagulation is responsible for the development of thrombosis. The primary cause seems to be some change in the inner surface of the vessel. Disturbances in the circulation add their share, but the main reason why the thrombus forming under these conditions is not harmlessly dissolved away again is because the blood is abnormally prone to clot, and this tendency to abnormally early and intense coagulation is generally under medicinal control.

100-101. **Further Research on Serodiagnosis.**—Guggenheimer has continued his research on the influencing of fermentative processes by human serum, and has found that while normal serum checks autolysis of organ tissues, the serum in certain pathologic conditions promotes the autolysis of human brain and rabbit liver tissue. Serum from pregnant women behaves like normal serum in this respect, checking autolysis, while placenta extract, on the contrary, promotes autolysis.

Weiss announces that similar tests showed an opposite behavior also on the part of the serum from patients with gastric cancer and normal serum. This renders plausible the assumption that something is lacking from the serum of certain persons and that this lack permits the cells to proliferate unchecked, with cancer as the result, at points exposed to special mechanical stress or irritation. It may be possible, he adds, to isolate from normal serum the element in question, the lack of which permits malignant proliferation of cells, and utilize this element in prophylaxis and treatment of cancer. The work is a preliminary communication from the Tübingen clinic for nervous and mental affections, and experiments are now under way with tissue extracts made from various parts of the stomach, with the aim to differentiate not only the cancer itself, but its very site in the stomach by the protective ferment formed on parenteral injection of the extract in question.

103. **The Graduated Tuberculin Reaction.**—Kögel declares that the Pirquet skin tuberculin test is practically valueless unless it is applied with graduated strengths. For this he commends the Ellerman-Erlandsen tuberculin titer method described in THE JOURNAL, 1909, lii, 1634. To be conclusive it must be applied repeatedly.

106. **Causes of Contracted Kidney.**—Siegel reported in 1908 that acute nephritis had developed in some dogs who stood in cold water for a time. It is a familiar experience that getting the feet wet often starts a "cold," bronchitis or ear affection, or even acute nephritis. Excessive perspiration of the feet keeps them clammy, and Engelen regards this as an important factor in kidney disease. He has found a history of hyperhydrosis pedum in every case of contracted kidney in persons free from arteriosclerosis, gout, syphilis, acute nephritis, lead poisoning, alcoholism and general dissipation. In one instance the apparently primary contracted kidney trouble developed in the forties in a brother and two sisters all of whom always suffered from excessive sweating of the feet. The constantly positive history in his exceptionally wide experience with contracted kidney, suggests the necessity for prophylactic measures, keeping the feet dry, controlling the tendency to excessive sweating by the usual formaldehyd treatment.

Medizinische Klinik, Berlin

January 11, X, No. 2, pp. 47-90

107 Vaccine Therapy in Gonorrhea. C. Bruck.
108 *Early Diagnosis and Modern Treatment of Blood Diseases. (Blutkrankheiten.) H. Hirschfeld.
109 *High Frequency Currents in Treatment of Arteriosclerosis. A. Bühler.
110 Expulsion of Entire Lining of Esophagus after Drinking Lye; Two Cases; Recovery in One. E. Liebmann.
111 *Dissolving Capacity of the Blood Serum. (Lösungskunst im Serum.) H. Schade.

108. **Treatment of Blood Diseases.**—Hirschfeld says that it is generally possible to find some preparation of iron that the patient can take, but arsenic is useful when the number of blood corpuscles is much below normal and there is little response to iron. Milk contains extremely little iron, so it need not be forced on the anemic as is often done. Small amounts of alcohol have a stimulating action on some anemic patients while others are unable to stand it. There is no deficiency in iron in pernicious anemia, but with repeated courses of arsenic it is possible sometimes to keep patients in good condition for years, even sometimes retaining their earning capacity. The patient should be kept under constant supervision so that the arsenic can be promptly resumed at the first signs of a relapse; iron may then prove useful also when the arsenic fails. In pernicious anemia, hydrochloric acid and pepsin must be given persistently. Transfusion of blood has sometimes done service but never realized a cure.

The reports to date on benzol treatment of leukemia are encouraging on the whole, but extreme caution is necessary, as in some instances the leukocytes dropped below the normal figures and death soon followed. The combination of radiotherapy and benzol seems most promising. It does no good to remove enlarged leukemic lymph-nodes as the trouble is systemic. If they are compressing organs or nerves they can be reduced in size by exposure to the Roentgen rays or radium. The leukemic lymph-node seems to heal faultlessly after an operation. Splenectomy in myeloid leukemia usually proves speedily fatal; only one case is known in which the patient survived, and the leukemia did not seem to have been influenced in the least. Some clinicians have reported excellent results from splenectomy in pernicious anemia, but others have had only some improvement; the blood picture never returned quite to normal.

109. **The High Frequency Current in Arteriosclerosis.**—Bühler has been applying electricity in this form in 266 cases of arteriosclerosis. The blood-pressure was above 130 mm. in all but thirty-six, and in nearly every case the application of the high frequency current for about ten minutes caused a reduction of 5 or 10 mm. in the blood-pressure. In 120 cases with minute records, the average blood-pressure was 174 mm. at first and after seven sittings it averaged only 146 mm., a decline of 15 per cent. Reexamination a few months or years later showed that the reduction had been permanent in a number while in others the pressure had gradually risen again to its old figure. He explains the benefit as the result of a relaxing of the musculature of the vessels under the influence of the electricity on the nerves. The artery walls thus relaxed become more flexible and oppose less resistance to the pulse wave.

111. **The Dissolving Capacity of the Serum.**—Schade expatiates on the fundamental importance for medicine of the physicochemical properties of the blood serum. Beyond the

reach of the microscope but accessible to physicochemical research, the serum is found to possess a wonderful faculty for diffusion, dialysis, osmosis, ionization, influencing colloids, and forming intermediate colloids. The simplest and most accessible element of the body, it reveals what is going on in the cells, and the general practitioner should keep abreast with the progress of serology as it offers the key to manifold problems of clinical medicine, as Schade reviews in detail.

Münchener medizinische Wochenschrift

January 13, LXI, No. 2, pp. 57-112

112 Exanthematous Typhus and Rose-Colored Spots. (Fleckfieber und Roseola.) E. Fraenkel.
113 Disease Resembling Psychic Epilepsy among Pacific Islanders. (Die kalte Waldkrankheit der Chamorro.) A. Leber.
114 The "Syphilitic Index." B. P. Sormani.
115 Practical Importance of the Quantitative Wassermann Reaction. F. Lesser.
116 The Skin Reaction to Organ Extracts. (Zur Technik der Palpidinreaktion.) E. Klausner.
117 Technic for Serodiagnosis. J. Bronstein.
118 Dosage in Roentgen Work. R. Klemböck.
119 Registration of Auricular Pulse by Way of the Esophagus. A. Weber.
120 Abderhalden's Dialysis Serodiagnosis. H. Oeller, R. Stephan and A. Mayer. Concluded.

Therapeutische Monatshefte, Berlin

January, XXVIII, No. 1, pp. 1-80

121 *Tuberculin-Mercury Treatment of General Paresis. (Die Tuberkulin-Quecksilberbehandlung der progressiven Paralyse.) W. v. Jauregg.
122 *Dangers of Salvarsan. (Gefahren der Salvarsantherapie.) F. Luithlen.
123 Thorium X Treatment in Internal Diseases. C. v. Noorden.
124 *Atropin in Stomach Disease. (Atropinkuren bei Magenkrankheiten.) D. Pletnew.
125 Serotherapy of Scarlet Fever. Moog.
126 Successful Vaccine Therapy in Severe Pyelitis from Bacterium lactis aerogenes. L. Langstein.
127 Trade Names for Proprietaries. (Zum Wortzeichenschutz von Arzneimitteln.) W. Heubner.

121. **Mercury Treatment of Progressive Paralysis.**—As long ago as 1887, Wagner von Jauregg published articles on the influencing of nervous and mental disease by an intercurrent febrile affection, even to the letting up of the symptoms of multiple sclerosis after an infectious sore throat. He has since accumulated considerable therapeutic experience in this line, which was the basis for his systematic treatment of general paresis with tuberculin; this he commenced in 1890. During that year he applied the tuberculin treatment in 69 cases of progressive paralysis and has been able to trace the history of 66 and also of 66 other patients under approximately the same conditions at the time and later except that no tuberculin had been given. Pilcz reported in 1910 a similar series of 60 patients. In a later series of 25 cases Wagner supplemented the tuberculin with mercury, as also Pilcz in a series of 86 cases. Meyer, Tamburini in Italy, Glouschkoff in Russia and others have also reported experiences in this line. The condition improves in nearly all the early cases to such an extent that the patients can return to business. Even in the advanced cases notable improvement may be realized and even complete remission in some cases. He has three patients restored to active business life, some with six or seven years to date of regained earning capacity. In the majority of cases, however, after a year or two of active business life the symptoms returned, but resumption then of the treatment was followed anew by a prolonged remission. The let-up in the symptoms begins during the treatment and continues to progress for several weeks thereafter. The regularity and constancy with which this occurs excludes any casual coincidence or a spontaneous remission; the extent to which the symptoms subside is also beyond anything observed in spontaneous remissions. He begins with 0.01 mgm. old tuberculin if there is no suspicion of tuberculosis; only a tenth of this dose is given when there is tuberculosis. The injections are made subcutaneously on alternate days or the third day increasing the dose to a final 1 mgm. This requires from eight to fifteen injections. He gives the mercury on the days between.

122. **The Dangers of Salvarsan.**—Luithlen's analysis of the mishaps after salvarsan shows, he says, that they are avoidable. All that is necessary is to determine the contra-indications for it and keep the dosage reasonable. The dose of salvarsan should never be over 0.3 or 0.4 gm. All persons should be excluded from salvarsan treatment who are in a state of depressed vitality from any cause outside of the syphilis, or have any signs of cardiovascular injury or kidney trouble, chronic poisoning from alcohol, nicotin or lead, or infectious disease, including florid syphilis itself. Salvarsan, he reiterates, should never be given in the secondary stage of syphilis; it is not only injurious in this phase, but is much less effectual than mercury. Especially dangerous for salvarsan treatment are concomitant tuberculosis, severe gastro-intestinal disease and affections of the nervous system accompanied by destruction of pathologic tissue liable already to cause disturbance. Pregnancy is also a contra-indication on account of the changes in the vessels which seem to accompany pregnancy. Mercury should be given also unless the kidneys are pathologic; not only the albumin, but the diuresis should be heeded. He mentions that the latest compilation ascribes 274 fatalities to salvarsan, including 41 in non-syphilities; the injection had been subcutaneous in 9; in 28 into a muscle, and intravenous in the others. When the salvarsan has a toxic action, the symptoms which appear promptly are the work of the salvarsan as a whole; these then subside completely and only later, after a longer or shorter interval, other symptoms may develop which are the work of the arsenic as the salvarsan compound breaks up. He calls these the primary and the secondary toxic phases.

124. **Atropin in Stomach Disease.**—Pletnew expresses amazement that so little use is made of atropin in treating abnormal conditions in the stomach resulting from abnormal excitability and overaction of the vagi. He has made a special study for years of indications for and results of a course of atropin treatment in stomach affections, and states that it can be relied on when secretion or motor functioning or both are deranged or there are anatomic lesions in the stomach wall. He relates some typical cases in each of these three categories. Atropin checks secretion, reduces acidity, combats pylorospasm and hour-glass spasm, and relieves the pains, as the spastic conditions are the effect of excessive secretion of hydrochloric acid. The more acid the stomach content, the longer the pylorus waits before opening. Atropin, of course, has only symptomatic action, but in this field it renders most valuable service. Morphin also checks the pain but this is followed later by a stage of increased secretion. (See Spitzig on "Vagotony and Mucous Colitis" in THE JOURNAL, Jan. 31, 1914, p. 364.)

Virchows Archiv, Berlin

CCXIV, No. 3, pp. 321-476

128 Origin of Plasma Cells. P. G. Unna. Commenced in No. 2.
129 Significance of Plasma Cells in Pneumonia in Children after Acute Infectious Diseases. J. Watjen.
130 Tumors in Rabbit Uterus. H. Stilling and H. Beitzke.
131 *Internal Hemorrhagic Pachymeningitis. Boeckmann and F. Wohlwill.
132 Changes in the Hypophysis in Experimental Diphtheria. S. Abramow.
133 Nerve Pigment in Parrots. (Das Nervenpigment beim Papagei.) M. Muhlmann.
134 *Changes in the Gastric Mucosa after Removal of Adrenals in Animals and the Experimental Production of Gastric Ulcers. O. Flinzi.
135 Gastric Ulcer Caused by Hyphomycetes. W. J. Ljubimowa.
136 Polypous Gastritis. E. Meulengracht.
137 Multiple Soft Plaques of the Bladder, a Form of Follicular Cystitis. (Malakoplakie der Harnblase.) E. Wetzel.
138 Glycogen in Smooth Muscles Normal. (Beobachtungen über Glykogen in der glatten Muskulatur.) J. de Kalbermatten.
139 Histogenesis of Tuberculosis of Lymph-Nodes. E. Joest and E. Emshoff.

131. **Internal Hemorrhagic Pachymeningitis.**—Boeckmann gives a brief report of the autopsy findings in fifty-seven cases of internal hemorrhagic pachymeningitis with a view to determining to what extent trauma and hemorrhage are involved in the causation of the disease. He concludes that the importance of trauma has been very much exaggerated and that, in a healthy individual, trauma and aseptic hemorrhage cannot cause it. Its frequent appearance in the course of progressive paralysis would seem to indicate an inflammatory circulatory origin.

Wohlwill reports thirty-seven cases and states his opinion that the internal hemorrhagic pachymeningitis is due to a primary proliferation of the subendothelial tissue, probably from some preceding lesion of the endothelium. In the material from a general hospital, infectious diseases are the chief cause; alcoholism is not very important. The disease is frequent in children, especially in infants. Birth trauma is responsible in a great many of these cases.

134. **Effect on the Stomach of Removal of the Adrenals.**—Finzi describes a series of experiments on rabbits and dogs and five autopsies on human subjects. In the animals after complete or partial abolition of adrenal functioning there were marked changes in the mucous membrane of the stomach consisting in circulatory disturbances, edema, hemorrhage and necrotic processes, the severest of which only exceptionally showed even slight tendency to heal. His reasons for assuming that the stomach lesions were caused by the adrenal disturbance are because they were less severe and recovered more readily when only one adrenal was removed; because they were not found in a rabbit which in spite of removal of the adrenals, showed no signs of decreased adrenal function; because the stomach lesions were not found when the operation consisted simply in removing the adrenal capsule, and because they were lacking when the rabbits after removal of the adrenals were given epinephrin or adrenals were transplanted from other rabbits. In five cases of stomach or duodenal ulcer in human beings, microscopic examination showed marked changes in the adrenals, thickening of the capsule, nodular hypertrophy, fatty degeneration, great congestion and multiple hemorrhages.

Wiener klinische Wochenschrift, Vienna

January 1, XXVII, No. 1, pp. 1-20

140 *Duodenal Ulcer. E. Schütz.
141 Inhibiting Influence of Gestation on Rat Sarcoma. (Einfluss der Gravidität auf das Wachstum maligner Tumoren.) E. v. Graff.
142 Typhoid Bacilli Found in Duodenal Contents Obtained through Tube. B. Purjesz.
143 *Nourishment during Pregnancy and Weight of the Child. (Gewicht des Neugeborenen und die Ernährung der Mutter.) J. Bondi.

140. **Duodenal Ulcer.**—Schütz advocated an operation in only seventeen of his 137 cases of duodenal ulcer; 87 per cent. of the total patients were men. He is convinced that progress will be along the lines of internal treatment alone. He calls attention to the fact that the symptoms of duodenal ulcer—the duodenal syndrome—has long been known, but not correctly interpreted. It has been ascribed to a neurosis and all older physicians have had typical cases of this kind dragging along for years into an advanced age or sometimes subsiding completely, showing that a complete cure is not only possible but common. The diet with duodenal ulcer, he insists, should be different from the gastric ulcer diet. With the latter the diet should be restricted in quantity and quality to spare the stomach irritation, but this is less necessary with duodenal ulcer. Instead of fluid food which passes rapidly along, more compact food is needed with duodenal ulcer; this lengthens the period before the pains come on. Food should be given in small amounts at intervals not longer than three hours at most, not allowing the stomach to become empty, even during the night. A further important measure is to neutralize the excess of acid in cases with hyperacidity and hypersecretion—which is the rule with duodenal ulcer—by giving large doses of alkalies in combination with belladonna. He advises this regimen in eating to be kept up even during the intervals, supplemented by mental and physical rest and treatment of the common nervous disturbances. Another important measure is to ward off getting chilled or catching cold; this may require extreme precautions during the cold weather. A course at Carlsbad may often prove useful. Treatment on these principles has given him very favorable results in numbers of cases, not only in reducing the severity of the attacks but in modifying the predisposition. In many cases all disturbances subsided soon after beginning treatment, even when the periods of pain had lasted for months or had been recurring more and more frequently. In a few cases no benefit was derived from these measures until they were supplemented by application of cataplasms and a rest cure, with exclusive milk diet.

143. **Diet during Pregnancy and the Weight of the Child.**—Bondi does not agree with Peller, whose work on this subject was reviewed editorially in THE JOURNAL, Jan. 31, 1914, p. 382. The weight of the child is independent of the mother's diet during pregnancy, he affirms, but there is a direct connection between the chemical substance of the mother and of the fetus. Neumann has recently announced that the serum of the child contains far more mineral salts than the mother's serum; for this reason he advocates giving unusual amounts of the mineral salts during a pregnancy. Dibbelt witnessed the development of disturbances resembling osteomalacia in gravid rabbits kept on calcium-poor feed; the skeleton of the young seemed to be apparently normal. Bondi thinks that measures to increase the weight of the child are liable to do more harm than good, as increasing the difficulty of delivery; especially among the poor in whom the rachitic pelvis is so common, it is directly injurious to increase the weight of the fetus.

Zentralblatt für Chirurgie, Leipsic

January 17, XLI, No. 3, pp. 89-136

144 Operations on Vessels. O. von Frisch and A. Henle.
145 Technic for Operation on Mammary Cancer. (In welcher Ausdehnung ist die Haut bei der Operation des Mammakarzinoms mit zu entfernen?) L. Moszkowicz.
146 Operative Treatment of Varicocele. E. Istomin.

Zentralblatt für Gynäkologie, Leipsic

January 17, XXXVIII, No. 3, pp. 113-152

147 Successful Treatment of Sciatica during Pregnancy with Ringer's Fluid. A. Barbey.
148 The Campaign against Gonorrhea. (Warum konnte die Blenorrhoe nicht abnehmen?) Credé-Hörder.
149 Hypophysis Extract Intravenously in Treatment of Post-Partum Hemorrhage. P. Kreiss.
150 Triplet Pregnancies. (Zur Kasuistik der Drillingsgeburten.) P. Gall and Z. Diamant.

Policlinico, Rome

January 11, XXI, No. 2, pp. 41-76

151 *Roentgen Treatment of Surgical Tuberculosis. G. Scaduto.

January 18, No. 3, pp. 77-112

152 *Iodin Sterilization of Silk. (Metodo semplice e rapido di sterilizzazione della seta per sutura.) G. Liotta.

151. **Roentgen Treatment of Surgical Tuberculosis.**—Scaduto has only five cases to report, but the benefit from exposures to the Roentgen rays after operative treatment was so pronounced that he urges this combination as great progress. The tuberculous processes were in the knee or elbow, and he applied the rays from four directions and repeated the exposures every two weeks, for three, five or eight months. One boy of 6 had a tuberculous process in the sternum and it healed in less than six weeks after the focus had been curetted; only three exposures had been required in this case.

152. **Iodin Sterilization of Silk.**—Liotta winds a single length of the silk in a single layer on a glass slide. The slide is then immersed in tincture of iodin for from five to ten minutes for number 1 to 4 silk. He has been using this method of sterilization constantly for three years with perfectly satisfactory results, and commends it to those who do not have laboratory facilities at hand.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

II, No. 16, pp. 1347-1442

153 *When is Arthrodesis Required in Epidemic Poliomyelitis? H. A. Laan.
154 *Action on Ovum of Superfluous Semen. (De beteekenis van het overtollige sperma voor de vrucht.) G. C. Nijhoff.

153. **Joint Fixation for Paralysis after Poliomyelitis.**—Laan remarks that too much is expected of tendon transplantation, and arthrodesis is liable to be done too soon, while Lorenz expects much from massage and forcible manual correction and warns against too ready resort to tendon transplantation or arthrodesis. What Lorenz has done for the Germans, Laan wishes to do for the Netherlanders, namely, to declare with all emphasis that joint fixation is seldom necessary and should never be done on children. He has seen complete

paralysis of the feet markedly benefited by the wearing of ordinary lace-shoes. If the resulting damage were better recognized, other methods would be employed in preference. Laan reiterates that the prevention of deformity is of prime importance; once developed, the deformity can be attacked by redressment or osteoclasis depending on the character and severity of the deformity and the age of the patient. Prevention of recurrence is of great moment and in many cases very difficult, especially among young patients; with grown persons it is much easier because growth has ceased and the tendency to recurrence is less. It is in these adult cases that the various methods of redressment, of tendon-transplantation or arthrodesis in its various methods can be employed. Laan is opposed to arthrodesis of the hip and knee; if it is necessary it must be a bony ankylosis. With drop-foot, in at least half the cases the joint works loose again. Even with perfect bony ankylosis, the patient often complains of unevenness of the soles and loss of endurance.

Laan is a strong advocate of silk ligament suspensions in cases not indicating arthrodesis. But for the shoulder, even Lorenz favors ankylosis of the shoulder on account of the anatomic construction and the nature of the paralysis. With paralysis of the deltoid muscle, the use of the joint is lost and all lifting movements of the upper arm have become impossible. The shoulder is moved principally by the deltoid muscle and the short muscles serve to form the scapula and the upper arm into a unit. This unit itself is moved by other muscles, attached to the scapula and humerus. When this fixation has become impossible, owing to paralysis, it must be reestablished. There are three methods to accomplish this: braces, arthrodesis and tendon transplantation. The brace is very unsatisfactory, and transplantation of tendons does little service here. Thus arthrodesis is the only resort, and this may give good results.

154. **Action on Ovum of Superfluous Semen.**—The text-books on physiology cite the countless numbers of spermatozoa at a single emission as an instance of the prodigality of nature when dealing with the perpetuation of the type, but Nijhoff has become convinced by the results of recent research that the superfluous spermatozoa may play an important part in the nourishment of the ovum. Spermatozoa have been seen to work their way into the mammalian ovum after the second, fourth, sixth and even eighth divisions. These spermatozoa entering the ovum after the impregnating spermatozoon may supply material for growth, but they can also be a vehicle for transmission of disease; the superfluous spermatozoa may come from another individual than the impregnating one. Possibly tuberculosis, syphilis and lead poisoning may be carried to the embryo in this way. It has been experimentally demonstrated that tubercle bacilli injected into the vagina may find their way inside the embryo. Nijhoff emphasizes that it is possible and probable that more harm may be done to the embryo by the superfluous spermatozoa than by the single one responsible for the fecundation of the ovum.

Nijhoff thinks that Constantin Paul's study of the effects of lead poisoning on the offspring is noteworthy from this point of view. Of the 142 pregnancies among women suffering from lead-poisoning, only forty-five resulted in a viable child and twenty of these died the first year; only ten survived past the third year. Almost similar figures have been published regarding the noxious influence of mercury and alcohol poisoning on the offspring.

Hospitalstidende, Copenhagen

January 14, LVI, No. 2, pp. 33-64

155 Differentiation of Dementia Praecox in Its Acute Stage in Hard Drinkers. (Om kroniske Alkoholpsykoser.) G. Neve.

Hygiea, Stockholm

December, LXXV, No. 12, pp. 1233-1408

156 Research on Artificial Respiration. (Undersökninger öfver ventilationen vid konstgjord andning hos människa.) G. Liljestrand, G. Wollin and J. O. Nilsson.

157 Complications of Suppurative Nasal Sinusitis, especially with Scarlet Fever. (Några crd om bihålcempyemens komplikationer, speciellt vid scarlatina, jämte ett kasuistiskt bidrag.) N. Witt.

158 Papyraceous Fetus. (Till frågan om de s. k. pappersfostren.) C. F. Heljl.

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January, LXXV, No. 1, pp. 1-184 and Supplement

159 Summer Infant Mortality. (Sommerdødelighet blandt spædbarn i Kristiania.) L. Nicolaysen.

160 *Relief of Dysphagia in Laryngeal Tuberculosis. (Behandling av svelgsmerter hos larynkstuberkulose.) O. S. Wetterstad.

161 Transverse Presentation: One Hundred and Two Cases. (Om tverleie.) Drejer.

162 *Diagnosis of Earliest Stage of Tuberculosis in Children. (Diagnosen av barnetuberkulosens kliniske initialformer.) H. G. Gade.

160. **Treatment of Difficulty and Pain in Swallowing with Laryngeal Tuberculosis.**—Wetterstad discusses the various methods in vogue for this purpose, saying in conclusion that injection of alcohol around the nerve involved in the trouble seems to give the best results, while it is a very simple and apparently harmless procedure. By the technic advocated by Hoffmann, 85 per cent. alcohol is injected around the superior laryngeal nerve, introducing the needle from the side of the neck, along the lateral thyroid-hyoid ligament. Boncour makes the injection on the median line between the body of the hyoid bone and the angle of the thyroid cartilage. Wetterstad followed the first technic in six cases and the second in four, all the patients suffering severely from their advanced laryngeal tuberculosis. Complete relief from pain followed the injection, the relief persisting for fifteen or thirty days or longer. The injection seems to be easier and freer from possible complications when made in the median line.

162. **Diagnosis of Incipient Tuberculosis.**—Gade says that at the seaside sanatorium at Hagevik during the last five years there were only seventy-nine of the 1,150 children who had a tuberculous process in and probably restricted to the bronchial lymph-nodes. He reproduces sixteen of the 850 Roentgen pictures of lungs which he has taken, insisting on the fact that when the bronchial lymph-nodes have become enlarged, the tuberculosis has passed beyond its initial stage. It seems impossible really to detect the tuberculosis in its incipiency, but roentgenoscopy will reveal it in a much earlier stage than any other diagnostic measure.

Ugeskrift for Læger, Copenhagen

January 8, LXXVI, No. 2, pp. 45-92

165 *Diagnosis of Epidemic Poliomyelitis and Treatment in Acute Stage. Monrad.

January 15, No. 3, pp. 93-150

164 Treatment of Sequels of Epidemic Poliomyelitis. H. C. Slomann.

165 Calculation of Doses for Children. (Beregning af Doser til Børn.) L. P. Sørensen and V. Scheel.

163. **Epidemic Poliomyelitis.**—Monrad describes the points which are most useful to differentiate this disease from others with which it may be confused, especially acute rheumatism, meningitis, appendicitis and polyneuritis. In some cases it was erroneously diagnosed as dislocation of the humerus or hip-joint or fracture. Slight fever, vomiting and headache with more or less drowsiness are generally noted in the incipient stage. The mortality seems to be higher for older children and adults, and the fourth day seems to be the most critical one. The large number of abortive cases reported from the epidemics in Sweden suggests that there may have been a mistake in diagnosis. Monrad protests against too active treatment in the acute stage; he insists on absolute quiet, keeping the patient still in bed as long as there are signs of general infection or acute local disturbance, and during this period, which may last for three or six weeks, all treatment with electricity, massage or passive exercises should be carefully avoided, as the patient should be left in absolute repose. He denounces even baths, which are recommended here and there, "and are applied especially in North America." The position in bed must be comfortable and the limbs kept in good position, without pressure from the bed clothes, etc. It is important, he adds, to keep the bowels in good order, as the paralysis may involve the abdominal muscles. The only drugs he uses are mild sedatives to enable the child to rest and sleep. An important point in treatment of poliomyelitis is to tranquilize the family, reassuring them that the disease often ends in complete recovery and that, in 50 per cent. of the cases at least, the paralysis in time subsides to practical recovery.

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